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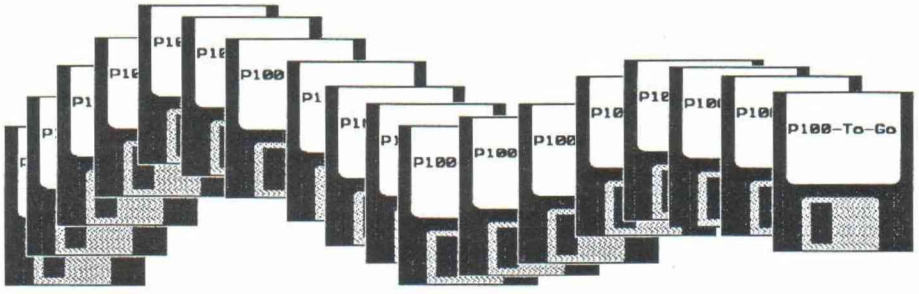

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VOL. 5, NO. 11
December 1988

ON
THE
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card to you.
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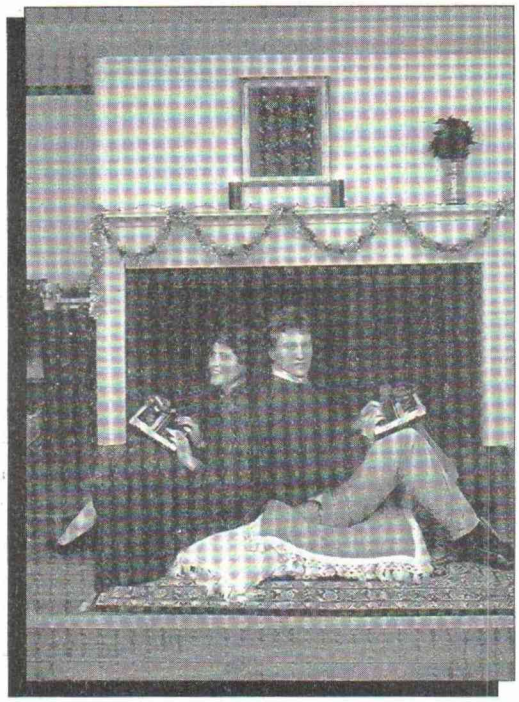
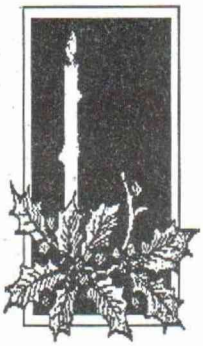
Richard Brayshaw.
Concept by
Mike Nugent.





Tandy 102

THE ART OF GENERATING EXPENSE REPORTS... (REVISITED) 8
byName Withheld by Request
Eliminate the drudgery simply and painlessly.

Tandy 200

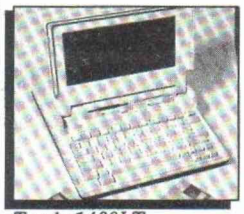
AND HOW LONG TILL CHRISTMAS NOW, DADDY? 12
by Ted McKosky, Jr.s
Anwer this question easily and rationally, with this handy program.

TAMING THE 200 15
by Michael Heim, Ph.D.
Shortcuts to suping up your Tandy 200

Tandy 600

A WATCHDOG FOR YOUR NICD'S 20
by Stephen R. Lankton
Just how much time /charge does your 1400LT's battery have left, anyway?

CALLING *TEXT* FROM *BASIC* 22
by Mo Budlong
Here's how to make it a round trip.



Tandy 1400LT

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ROM WITH A VIEW

Greetings

October is an awkward time to write about Christmas, to find the proper feel and spirit amid the daily high-speed tumble. Computers, programs, readers, advertisers, deadlines. Always running. Always "on."

Suddenly, a snowball whizzes past! And the noise of the world fades away beneath the delighted laughter of my little girl, Shannon. What luck that she visited during an early fall snow. Ah, there's my Christmas! For a while, magazines, computers, and deadlines give way to an impromptu snowball fight. To laughter, closeness, and love.

I hope our cover conveys that. Business continues as usual, of course, inside the magazine, but I wanted the cover to be our Christmas card to you. If it seems a little corny, well, that's okay. Sometimes we *are* a little corny.

As the "new" Portable 100 ends its first year, we can look around and count our blessings. They are many. Your support and loyalty has been foremost among them. Through many a storm you've stood by us. And it's coming back to you now. Good things are happening. Thank you!

Let's congratulate *Custom 200* columnist, Paul Globman, whose marvelous *XOS* operating system enhancement package recently took second place in the Model 100 Forum's annual programming contest on CompuServe. Nice work, Paul!

New blessings: King Computer Services just released a *BASIC*-to-ROM compiler for the Model 100/102! Yup! (See their new ad in this issue.) How's that for support? Naturally, we'll mess around with it and give you all the details in a future issue.

More blessings: PCSG is in our ads now. Of their many fine products, probably best known is the classic *Super ROM*, combining word processing, database, outliner, and the very capable *Lucid* spreadsheet, all on a chip. Glad to have you aboard, PCSG!

Thanks for old blessings: You won't see Traveling Software for a while after this issue. They plan to advertise only in October, November, and December from now on. Though they've said they always make money in *Portable 100*, they feel there's more to be made in the MS-DOS market. Seems a shame to abandon a profitable clientele, but that's their choice. They supported us during some rough times, and we're thankful. Here's hoping their plans change, because you readers need, and should know about, their excellent products.

As important as computers are to you, and certainly to us, some things are even more so. Like happy kids and snowball fights. Big hands holding little ones. Loving and being loved. We just forget sometimes or take it for granted, that's all. So my gift to you is a little reminder. If there's someone special nearby, maybe you should put this magazine down for a moment. Go and give 'em a big hug, and tell them just how special they are.

We'll still be here when you get back.

Best wishes!

-Nuge

Toolbox

Manuscripts were typed into Microsoft Word 3.0 on a Tandy 1400 LT, where they were edited, spell-checked, and had basic format instructions inserted. From there they were loaded into a Tandy 4000 (80386 CPU, Tandy EGA Monitor, Tandy LP-1000 LaserPrinter) desktop computer and placed into Aldus' IBM PageMaker 2.0a. There they were put into a rough approximation of the magazine's final appearance. Here, pull quotes are placed, headlines, intros, and bylines are sized and positioned, and advertisements positioned.

Next, the magazine was ported over to our Art Director's Macintosh Plus, using the 1400 LT and Mac-link. She then went over the publication using Aldus Macintosh PageMaker 2.0a, making final design decisions on photo, figure, and listing sizes and placements. She precisely placed the text and added all the little things that go into making a nice looking publication.

Page previews were output from her Laserprinter. When everyone was satisfied with the appearance, the Macintosh disk was sent to Colorite Corp. in Wisconsin for final output directly onto photographic paper. The finished magazine was then delivered to the printer, who printed it, labeled it, and mailed it to you.

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PORTABLE CLAIRVOYANCE?

Once again I find myself needing to relate my feelings about the new *Portable 100*. It would seem all I have to do is think of an idea, and behold, the next month's issue in some form deals with that idea. It is certainly the case with September's articles: *HOTKEY*; *Custom 200*; and *End Your Computer's Solitude*. Thanks for being there for us.

I am hoping you can help me with two questions. First, how can I get a copy of the technical manual for both the PDD-1 and PDD-2? Second, is *Portable 100* planning any maintenance type articles, like how to make adjustments on the Model 100 and PDD, preventive maintenance, and so forth —articles that will show us how to check to see if everything is working to specs?

Bernard Upshaw
Landover, MD

Radio Shack stores can order manuals for you. Except for the very newest equipment, a manual's catalog number is simply the equipment's catalog number with the prefix MS *for service manuals and* MU *for user manuals. Service manuals cover maintenance procedures, but if there's enough interest in such articles, we'll certainly run 'em.*

-MN

TWISTED PAIR

Dale Edmondson (October '88 *I/O*) will be pleased to know that an article has already been written telling how to construct a Model 100 modem cable. I wrote it. It's in *80- Micro*, Dec. '83, pp. 244-6.

Bob Scott's article on 450 baud was fascinating, as was the sidebar. Keep up the good work.

Carl Oppedahl
New York, NY

Aha! I knew I'd seen an excellent article on the subject but couldn't remember where. Thanks, Carl! Don Penner has also submitted an article describing his method. I hope to print both of them soon.

Incidentally, Carl is the author of many computer articles as well as the books Inside the Model 100 *(see ad in this issue) and* The Telephone Book *(available through Weber Systems, Inc.).*

-MN

SORRY, SIS!

I enjoyed reading your review of the Gold Card in the October '88 *Portable 100*. One thing bothered me, though. I'm sure it was just a witty slip of the tongue, but for the sake of impressionable young readers out there I think it should be corrected.

When introducing the Gold Card's ROM Eliminator, you said "This option lets you copy ROMs to a Gold Card. Then you can give the ROMs to your sister." While copying the ROMs is legal, and giving them to your sister is legal (usually; it depends on the program's license agreement), doing both is definitely not! It violates the copyright on the ROM and deprives the author of the ROM code of payment for his effort.

Does that mean you are also one of "those" Wayne Green Publications?

Faced with fears of lost profits from this kind of "code sharing," companies tend to respond by doing unpleasant things, such as not developing new programs and booby-trapping programs in subtle ways to make them harder to copy—unfortunately, it usually makes them harder to use and less reliable, too. Let's not give companies any excuse for that, shall we?

Brad Whitlock
Raleigh, NC

Whoa! You're absolutely right, Brad! I hadn't noticed the implication there, and I wouldn't want anyone to think it's okay to actually do that. That's stealing, and it's illegal. If my sister had a computer, I might have caught the slip. So give her a computer instead, and let her get her own software. (Sorry, Nancy!) Thanks for pointing that out, Brad!

-MN

KEPNER, NOT GREEN

I recently purchased a Tandy 200 and have picked up your magazine from time to time at the local book store. I understand that most Model 100 basic programs will run on the 200, providing there are no *PEEK*'s, *POKE*'s, and *CALL*'s.

My question to you, sir, is, whenever a program will run both on the 100/200, will you so state in the first paragraph of the article?

My second question to you is, before you print a program, does your office verify that it will run?

My third question is, where can I obtain a listing of the *BASIC* program differences between the 100 and 200?

I have spent many many wasted hours with programs that just don't run, from publications like *73* and *Kilobaud*. I finally learned not to waste my time constructing projects and entering programs from either of those magazines.

I see that you are also in Peterborough, NH. Does that mean you are also one of "those" Wayne Green Publications? I would like to know the above before I subscribe to your magazine.

Is there any way I can obtain a response from you without having to see it printed several months from now in your "Centronics, not Epson" column?

Your reply will be sincerely appreciated.

Dan Babin
Sherman, TX

Most M100 programs run on the 200 under the conditions you stated. When applicable, we list compatibility information above the article's title and any required changes at the end, and whenever possible, we test programs before publication. M100/200 differences have been addressed in various back issues and several files on the major on-line information services; I know of no single listing that covers it all. Portable 100 *is not connected with Wayne Green. Although I've sent you a letter, personal replies normally require that you include a SASE. By the way, I like your up to date letterhead!*

-MN

BEST OF BOTH WORLDS

Your October '88 article by Stephen R. Lankton on the CMS Hard Drive for the 1400LT was superb!

I own both a Model 100 and a 1400LT

and appreciate you covering the 1400LT also. Do you plan to include more articles and tips on the LT? It seems that the LT will be the next Model 100 in popularity. I hope you are a part of it. Thanks for your service and please renew my subscription!

Michael Rybinski
Springfield, VA

For many Tandy notebook users, the 1400LT will be their next machine (and vice versa). Since P100 is a magazine for Tandy laptops, we try to run one 1400LT article a month. This month, Stephen reviews Battery Watch *from Traveling Software. Please feel free to share any hints and tips of your own.*

-MN

WEIGHT WATCHERS

I judge a magazine by the content. This one is not fat! It is very sparse and of little content. If it doesn't get better, this will be my last year.

Larry Rickard
McKean, PA

If thickness alone is important, perhaps you'd find the New York City Yellow Pages more appealing. It's plenty hefty and full of information—even some fiction!

I'm with you in wanting a fatter P100, *and I think you'll get your wish. Thanks for giving it a chance. Meantime, we still pack a lot of good info into the space we have. And fortunately for some, we don't judge our readers strictly on density.*

-MN

TURN UP THE HEAT!

Let's get frank with the readers and tell them the task of putting out a bigger *Portable 100* depends on a large increase in advertising content with accompanying advertising dollars. Encourage the readers to help by telling software vendors, "I might be interested in *SLOPPY.BA* or *JUNK.CO* if I saw it advertised along with a review in *Portable 100*."

Bless Traveling Software, Ultrasoft Innovations, and the rest of the loyal gang listed on page 32 of this October issue. Without their support *Portable 100* would disappear again. That list is way too short; it should fill the entire page!

The subscription dollar accounts for only 15-20 percent of a magazine's cost and is barely more than the cost of postage. Let's put the heat on the vendors. Don't leave out the MS-DOS lap jobs, for programs written for the 100-102-etc. can run in them too, if they're not system specific.

I often write programs for my spouse's 102 with my Tandy 1000. We have *COSTS.BA* to keep track of our expenses when traveling. I wrote it with *DeskMate*.

We Tandy loyalists saw what happened to *80-Micro* when the advertising dollar disappeared. I'm not entirely sure what happened, but I suspect it was caused by reviews written a bit too candid, along with outright criticism of some vendors, possibly justified, but sharp enough to scare them and other vendors away. No one likes to have to grow another five pounds of backside after a national review of his product.

I would love to see *Portable 100* as thick as *Vogue*, but a count of advertising pages will show WHY the postman hates it when *Vogue* is in his mail bag. Let's make the postman earn his wages delivering *Portable 100*!

Walt Stevenson
Pittsburg, KS

Well put, Walt! 80-Micro *dropped TRSDOS support, thereby losing half their subscribers in one year, and thus, the TRSDOS advertisers. MS-DOS advertisers thought, "Why use* 80-Micro *now when more people read* PC World *and* PC *magazine?"*

Here's the best part--an outbreak of hernias within the postal system!

Our base coverage is notebooks, since over 90 percent of you own them. We won't drop them. They're what Portable 100 *is all about! As for reviews, we prefer to report on what's good and useful—not wasting space on the worst products—but still pointing out any problems or idiosyncrasies so you'll know what you're getting.*

To grow, we all need each other—reader, advertiser, and magazine. Its a community. It's your magazine, and you have more power to help than anyone else. Use it. More ads means more magazine and more products for you, and—here's the best part—an outbreak of hernias within the postal system!

-MN

FORTHRIGHTNESS

I've discovered that there is a glitch in the *FIG4TH CALL* word that garbles the called addresses. The way the call was built left the bytes in numerical order, but they must be *reversed* as an 8085 address. Here's how to fix it:

- Load *FIG4TH* (kernal only, for disk systems) into RAM
- In *BASIC, CALL 41216* to cold start *FIG4TH*
- Type: *HEX 73 B505 C! 72 B507 C! DECIMAL* and press *ENTER*
- Type: *HERE U.* (note this number)
- Type: *BYE* to exit *FIG4TH*
- In *BASIC* type: *SAVEM "FIG4TH.CO", 41216,*(number from *HERE*),*41216* and press *ENTER* to save the "fixed" *figFORTH*.

Now you can save this back to disk or tape to replace the original version. Sorry to have caused the problem.

Keep up the good work.

David O. Rowell
Marietta, NY

?IO—CORRECTIONS

Relax, the programs are fine! I just didn't update the text in the articles after modifying the programs. *FRAZY-OLOGY* (Oct. '88, p. 8)—textual references to line 540 actually describe line 582 in the program. *ENVPTR.BA* (Nov. '88, p. 15)—renumbered this puppy: line 13 became 70, 17-19 became 110-130, and 32-34 became 250-270. (Please don't tell the authors, okay? Maybe they won't notice!)

-MN

We welcome all letters from our readers, whether critical or complimentary. We print as many letters as space permits (some are edited for space considerations). Address your correspondence to: Portable 100, I/O Dept., P.O. Box 428, Peterborough, NH 03458-0428.

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CALL TO 1400LT OWNERS

When the Tandy 1400LT computer was first released, they did not include Software Registration cards for the MS-DOS and *BASIC* that was included with the computer. Current production does include this card.

If you didn't get a card, contact your store and ask them to be sure you are registered. Names and addresses must be sent in by a store, on store letterhead, so don't try to send it in yourself. Contact the store you bought it from, and ask them to do it for you.

From Tandy User Group Newsletter (Sept. '88), Tandy Corp./Radio Shack.

7-BYTE DOS

I received the September 1988 *Portable 100* today, and per the article on page 21, I poked in the DOS *FLOPPY* patch. I did everything as noted, except that when I *SAVEM*'d it I typed *59400,59400,59400* instead, and this saves 3362 bytes. On the menu now *NEWDOS.CO* only takes up 7 bytes where it used to take up 3359, and it only uses more bytes when it is running. I've been doing this with *FLOPPY* for a long time to save precious memory. *NEWDOS.CO* seems to work fine after saving it with these addresses.

H.E. Boulware
Vichy, MO

A word of caution: Normally, when a .CO file is run from the menu, the entire file, except for 6 bytes of "header" information, is copied to high memory and then executed there. In the technique above, only one byte (7 bytes minus header) is copied to high memory, so the rest of the file must already be there. This means that once you've SAVEM*'d the 7 bytes, the rest of the file must remain in high memory, undisturbed. Running other programs which use that area of memory or raise the* HIMEM *pointer will corrupt the code. Then nasty things will happen when you run* NEWDOS *or* FLOPPY *again. For more information on this technique, see "Conserving Precious Memory" (Nov. '85,* Portable 100*).*
-MN

HELPFUL *KILL* FUNCTION

We are all familiar with the tedious chore of deleting individual files from the M100 screen, with or without the aid of the helpful *KILL* function now included in many commercial programs. Purge programs I have tried in the past nicely delete text files but fail to delete *.BA* programs, coming to a screeching halt with an *OK* prompt whenever a *.BA* program has been knocked off.

For some time now, I have been using the following scheme to purge groups of files, including *.BA* files, without interruption (other than a few taps on the *F4* key). The scheme involves setting up a *KEY.BA* file, which may be routinely used for defining function keys, and individual *ERASE.BA* files for each group of files one wishes to delete—the latter is stored along with that group. Running the purge program simply entails placing the menu cursor over *ERASE.BA*, pressing *ENTER*, and tapping the function key *F4* a few times, and presto—the entire file package has been deleted, *.BA* files and all!

This may be individualized to suit one's needs.

Listing 1, *KEY.BA*.

This may be individualized to suit one's needs. I use the following with my Chipmunk drive:

```
1 PRINT@126, "press F4 when Ok/Run appears"
2 CALL 23164,0,23366 :CALL 27795 'for cold start default function keys
3 ON ERROR GOTO 11
4 C$=CHR$(13)
5 KEY6, "Lfilesoff"+ C$+"MENU"+C$
6 KEY7, "Call0"+C$
7 POWER CONT
8 SOUND OFF
9 KILL "ERASE.BA"
10 CALL 0 'may substitute "MENU" if not using drive
11 RESUME NEXT
```

Listing 2, *ERASE.BA*.

This is, of course, just one example of an individualized *ERASE.BA* program. I use the following to delete my renumbering program package, but just use the template to create your own *ERASE* programs.

```
1 PRINT@126, "press F4 when Ok/Run appears"
2 ON ERROR GOTO 4
 :KILL "STARTR.BA"
 :KILL "RENUM.BA"
 :KILL "RENUM.CO"
3 RUN "KEY.BA"
4 RESUME NEXT
```

The number of files being deleted is inconsequential, and the program will kill any type of file. For groups of files frequently used, it can be a great time saver.

Henry Glover, M.D.
Glendale, CA

CONNECTING MODEM TO MODEM

I have seen articles in different magazines and books stating the only way to connect a Model 100 and a Tandy 1000 (or any other two computers for that matter), is going RS-232 to RS-232 via a null modem adapter. The RS-232 seems to be optional on most PC compatibles, but if you have installed an internal modem, there is another way — modem to modem. On the M100, connect the beige cable directly to the modem on the other computer, use originate mode, *M7I1E*, and press *TERM* (*F4*). On the desktop, use parameters *300 E71*, and in the *TERM* mode type *ATA*. This causes the modem to go off-hook, answering the M100.

Thomas E. Wagner
Hyde Park, MA

BAREFOOT PROGRAMMING

Here are some "gimmicks" I use that might be interesting or fun for non-programmers like me.

Open a *TEXT* file (I use *WORK.DO*).

Be sure the printer is ready to go, and type the following:

```
BASIC
LPRINT TIME$, "YOUR NAME"
MENU
WORK.DO
```

Copy the above using *SELECT* and *COPY*. Press *F8* and then *PASTE*. You should end up with the time and your name on the printer, and be back in the *.DO* file you started from. That is, you issued commands and information from the file you were working in and returned.

Open a *TEXT* file, any name you like (I use *NOTE.DO*), and type the following:

```
BASIC
OPEN "NOTE" FOR APPEND AS 1
PRINT#1, TIME$
PRINT#1,"Any text you choose"
PRINT#1,DAY$" Mix and Match
      "DATE$
CLOSE
MENU
NOTE.DO
```

Copy the above with *SELECT* and *COPY*. Now press *F8* to go to *MENU* and press *PASTE*. You will end up in the file you named and you will find the time and your text printed at the top of the file if it was empty, and at the end of the file otherwise. You have issued orders from a working file and this time received information back, again without leaving the file.

If you type *TEXT*, or *SCHEDL* (or any other menu item) on the *Select* line, it is the same as using the wide cursor bar, (everybody knows that!). But it makes a two-way street between files, *BASIC*, and the other menu functions.

The example above is a good way to watch a *BASIC* program in action. Part of it is a *BASIC* program, only the line numbers are missing. But the *Select* line allows reentry to *TEXT* and all other functions, and vice versa.

It is flexible and easy to do for non-hackers like me. It is also a lot of fun. For example, you can add *DATE$*, *DAY$*, and get the remaining memory—*FRE(0)*—by typing them on the same *PRINT#1* line. You can add text by typing *PRINT#1, "text goes here"TIME$*. You can have one *PRINT#1* or as many as you need. Don't forget the quotes when you add text.

Substitute 2+2 for *TIME$* and you can see a new possibility. Also, change the file name that is opened in the second line, and you will send info to another file and return. Even paste lines from one file to another by putting them between quotes.

If you are using *POWR-DOS* or a similar type of program you can send info to the disk and be returned to your working file.

Sending info to the cassette or *LPT:* requires changing the word *APPEND* to *OUTPUT* in the open line. *OUTPUT* will cause the named file to be killed and replaced by the new info. Use caution if you're not too familiar with the terms yet.

If you are writing a report (or whatever) that uses a lot of specific data, such as the weight of a Buick in grams or the circumference of the earth, the following might help.

Put the data in *NOTE.DO*. Then in the file you are working on, type the following.

```
SCHEDL
LFND (search word)
MENU
WORK.DO (or whatever name you
   choose)
```

Again *SELECT* and *COPY*. Press *F8* then *PASTE*. If the printer is ready, the information you need will be printed,

Here is another "barefoot" hint!

and you will end up in the file you are working with. You can type several *LFND*'s. I normally use single sheets in the printer so I'll have the info on the printer in case I forget it. When you think about it, the printer is really an 8.5 x 11-inch screen for the Model 100.

Here is another "barefoot" hint. Open a new file in *TEXT* and name it *B*. Then, using lower case (NO CAPS!) type the following.

```
basic
2 hello dere!
3 your name
1 some one else's name
save "b",a
menu
b.do
```

Again, *SELECT* and *COPY*. Press *ESC* twice (or *F8* once), and then press *PASTE*. You will end up in *TEXT* file *B.DO* and only the numbered lines will be present. They will be in capitals, and they will be in numerical order.

This may look very simple and maybe useless but it has the following effect. It converts lower case to all upper case, which most "home-brew" databases require. It changes the order of the numbers to normal. It also provides a means of storing your databases on cassette in 1/3 the space and, therefore, 1/3 the time to *CLOAD* or *CSAVE*. If you enter *BASIC* and press *F5* (*List*) you will see the same two lines. You can now *CSAVE* them to cassette the same way you would a *BASIC* program! *BASIC* will automatically change these lines into a compressed form. I know that cassettes are not used much, but this is the way I backup my *.DO* files, and it gives me something useful to do with the old cassettes I got stuck with when I bought the disk drive and *POWR-DOS*.

Don't forget that you now have two copies of *B.DO*—one on the menu as a *.DO* file and another in *BASIC* as a program that you can't *RUN*! However you can *CSAVE* it to cassette in compact form and in upper case. Also, you can edit it by typing *EDIT* and pressing *ENTER*. You can look at it by using *F5*, or you can erase an entire line by typing just the number of the line in *BASIC* and pressing *ENTER*. If you don't want upper case, just put an apostrophe or type *REM* after the number. Type *NEW* and press *ENTER* to erase this pseudo-program from *BASIC*.

All of this may seem too simple to most, but the Model 100 is used in so many ways with so many different items of hardware and software, they may prove useful. Non-hackers like me should be able to have fun with them and be able to develop their own applications.

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Forum is where you can show off your expertise and help your fellow readers! Address your tips, hints, and techniques to: Portable 100, Forum Dept., P.O. Box 428, Peterborough, NH 03458-0428.

COMPATIBILITY: Tandy 100/102/200, Olivetti m10, Kyocera KC-85, NEC PC-8201A/8300 (with modifications); Untested: Tandy 600, 1400LT

The Art of Generating Expense Reports ... (Revisited)

by Name Withheld by Request

Ten years later, and the MBA's at the Big Company are still doing their expense reports the same way! Will they ever learn? No wonder the government is de-regulating.

EXPNS.BA was written sometime in 1978 on what was then *the* computer of the industry, the Altair. It was written because I was tired of having to figure out breakfast-lunch-dinner, breakfast-lunch-dinner, breakfast-lunch-dinner for days on end. All dollar amounts had to agree both horizontally and vertically to the magic amount at the lower right-hand corner. Sometimes this seemed an impossibility.

Expense reports aren't bad for a one-day or two-day trip. But imagine a three-week, four-week or even a two-month expense report! Enough to drive you up a proverbial wall. On that big one it took me two days of adding columns and rows to make everything add up correctly (and with luck, to the amount of the advance I had left). Sure, the idea of writing down everything you spend for meals in a little book is OK for about a week. Then the entries start to get messy a day or two later as Motel Syndrome settles in. (What? Eat at a hamburger joint and then have fun, fun, fun at night? Well, maybe once in a while.)

EXPNS.BA is about the only really practical value I have ever found for the random-number generator function of *BASIC*. Are you starting to get the idea? What do they know and what do they care, as long as the horizontal and vertical dollar amounts check out with the value in the lower-right hand corner? It works!

EXPNS.BA has, of course, been modified, slimified, and graphified for the Model 100 family of computers. You might notice a new command or two in the menus, but other than that, it still satisfies the need: "Get your expense report done, TODAY!"

No, I am not cheating on expense reports; I am playing the game by their own rules. But I'm just trying to make my work a little easier. In other words, this program uses the random number generator for a practical application other than the *usual* guessing game. It lets your computer do your guessing for you.

Let's look at the company rules for expense reports.

- Receipts are needed for rooms.
- Receipts are needed for car rental.
- Receipts are needed for gasoline.

I am playing the game by their own rules.

- Receipts are *not* needed for meals (our ace in the hole).
- Receipts should average about $15 a day, depending on area.
- Meals should be reasonably priced.
- No expenses allowed (on my level) for fun, fun, fun.
- All the horizontal (daily) rows must add up.
- All Vertical rows must add up.
- Spending too little will mess up your buddies on their next trip.

The program has an *EXEC mode*. Its special commands include the following:

- *PRINT REPORT (P).* Generates a complete matrix with horizontal totals, including a total report.
- *SPECIAL (S).* Inserts items such as laundry, taxi, etc. by a given date.
- *CHANGE MEALS (C).* Allows a positive or negative vertical increase on the meal of your choice (e.g. all the dinners should be increased about $1.50 more). This change happens on all nonzero meals.
- *RE-RANDOMIZE MEALS (X).* Means that you have decided after all to take the *(N)o* path for the standard meal deductions.
- *DISPLAY DATE (D).* Changes one of the five variable elements. This is how you zero a meal (e.g. breakfast for the first day was zero since you didn't fly out till 9 A.M.).
- *COMMANDS AGAIN (?).* Reprints the commands in case you get mixed up.
- *ROOM RATE (R).* Allows a complete overhaul of the room-rate structure (better have receipts).

Other commands include *TOTALS (T)* and *END (E). ITERATIVE MEAL INCREASE (I)* is perhaps the most interesting command. If, for example, your unaccountables are $280.56 and you would like to reduce this item to $250.00 (because you're too cheap to make up the difference), the command calculates how much to add to all nonzero meals so that the total unaccountables will equal what you have specified. This portion of the program takes time and will go through three or four passes until it gets the unaccountables to your specified values. Relax and watch the lights blink. Remember: the alternative is to run the horizontal and vertical sums with a calculator ... or *pay*.

Now, eat at the hamburger stand; then you can afford to have fun, fun, fun!

Bibliography: "The Art of Generating Expense Reports," KILOBAUD, *December 1978, author's name withheld.*

Editor's note: be sure to have the CAPS *key locked down when running this program.*

NEC modifications: replace all occurrences of PRINT@n, *(where* n *equals some value) with* LOCATE nMOD40, n\40:PRINT. *-MN*

```
1Ø CLS:PRINT@48,"EXECUTIVE EXPENSE GENER
ATOR":PRINT@162,"Copr.1984, Gold Mine Ga
ng Enterprises":REM 12/22/88
2Ø CLEAR1ØØØ:RV$=CHR$(27)+"p":NV$=CHR$(2
7)+"q":DATA31,28,31,3Ø,31,3Ø,31,31,3Ø,31
,3Ø,31
3Ø SEC=VAL(LEFT$(DATE$,2))+VAL(MID$(DATE
$,3,2))+VAL(RIGHT$(DATE$,2))+VAL(LEFT$(T
IME$,2))+VAL(MID$(TIME$,3,2))+VAL(RIGHT$
(TIME$,2))
4Ø FORD=1TOSEC:X=RND(1):NEXTD:GOTO7Ø
5Ø PRINT@287,"PRESS ANY KEY TO CONTINUE
";
6Ø T$=INKEY$:IFT$=""THEN6ØELSEPRINTT$;:C
LS:RETURN
7Ø CLS:PRINT@165,"# OF DAYS";:INPUTDY
8Ø DIMA(DY,5),R$(DY),MZ(12)
9Ø CLS:PRINT@165,"START DATE MM,DD,YY";:
INPUTMM,DD,YY
1ØØ D1$=RIGHT$(STR$(MM),LEN(STR$(MM))-1)
+"/"
11Ø D1$=D1$+RIGHT$(STR$(DD),LEN(STR$(DD)
)-1)+"/19"
12Ø D1$=D1$+RIGHT$(STR$(YY),LEN(STR$(YY)
)-1)
13Ø IFMM>12ORDO>31ORABS(INT(MM))<>MMORAB
S(INT(DO))<>DOTHENBEEP:GOTO9Ø
14Ø FORN=1TO12:READMZ(N):NEXT:IFINT(YY/4
)=YY/4THENMZ(2)=29
15Ø N=1
16Ø FORN1=DDTOMZ(MM):A(N,Ø)=MM*1ØØ+N1
17Ø N=N+1:IFN>DYTHEN2ØØ
18Ø NEXTN1:DD=1:MM=MM+1:IFMM=13THENMM=1:
YY=YY+1
19Ø GOTO16Ø
2ØØ D2$=RIGHT$(STR$(MM),LEN(STR$(MM))-1)
+"/"
21Ø D2$=D2$+RIGHT$(STR$(N1),LEN(STR$(N1)
)-1)+"/19"
22Ø D2$=D2$+RIGHT$(STR$(YY),LEN(STR$(YY)
)-1)
23Ø CLS:PRINT@11,"REPORT WILL COVER  ":P
RINT:PRINTTAB(5);D1$;"  TO  ";D2$
24Ø PRINT@165,"STARTING DOLLARS YOU HAD"
;:INPUTSD
25Ø CLS:PRINT@165,"DOLLARS YOU ENDED UP
WITH";:INPUTEV
26Ø SD=INT(1ØØ*SD):EV=INT(1ØØ*EV)
27Ø C=Ø:CLS
28Ø PRINT@165,"ROOM RATE";:INPUTRR:RR=IN
T(1ØØ*RR):Q=RR:R=6
29Ø CLS:PRINT@165,"# OF DAYS AT RATE ";:
GOSUB251Ø:INPUTT
3ØØ IFC+T>DYTHENCLS:PRINT@165,RV$;"** IM
POSSIBLE **";NV$:BEEP:GOTO27Ø
31Ø FORN=1TOT:A((C+N),4)=RR:NEXTN
32Ø C=C+T:IFC<DYTHENCLS:PRINT@85,"DAYS R
EMAINING ";DY-C:GOTO28Ø
33Ø IFFL<>ØTHEN59Ø
34Ø T$="":CLS:PRINT@85,"STANDARD MEAL DE
DUCTIONS";:PRINT@165,"(Y)ES OR (N)O ";:G
OSUB6Ø
35Ø AB=1.5:AL=2.5:AD=6.5:BS=.2:LS=.5:DS=
.75:D1=-3:D2=3
36Ø IFT$="N"THEN39Ø
```

continued

```
37Ø IFT$<>"Y"THENBEEP:GOTO34Ø
38Ø GOTO51Ø
39Ø T$="":CLS:PRINT@16Ø,"AVERAGE BREAKFA
ST $1.5Ø  (Y)ES OR (N)O ":GOSUB6Ø
4ØØ IFT$="Y"THENAB=1.5:GOTO43Ø
41Ø IFT$<>"N"THENBEEP:GOTO39Ø
42Ø CLS:PRINT@165,"AVERAGE BREAKFAST WAS
 ";:INPUTAB
43Ø T$="":CLS:PRINT@16Ø,"AVERAGE LUNCH W
AS $2.5Ø  (Y)ES OR (N)O ";:GOSUB6Ø
44Ø IFT$="Y"THENAL=2.5:GOTO47Ø
45Ø IFT$<>"N"THENBEEP:GOTO43Ø
46Ø CLS:PRINT@165,"AVERAGE LUNCH WAS ";:
INPUTAL
47Ø T$="":CLS:PRINT@16Ø,"AVERAGE DINNER
WAS $6.5Ø  (Y)ES OR (N)O ";:GOSUB6Ø
48Ø IFT$="Y"THENAD=6.6:GOTO51Ø
49Ø IFT$<>"N"THENBEEP:GOTO47Ø
5ØØ CLS:PRINT@165,"AVERAGE DINNER WAS ";
:INPUTAD
51Ø FORN=1TODY
52Ø GOSUB1Ø5Ø:A(N,1)=AB+INT(1ØØ*R*BS)/1Ø
Ø
53Ø A(N,1)=INT(1ØØ*A(N,1))
54Ø GOSUB1Ø5Ø:A(N,2)=AL+INT(1ØØ*R*LS)/1Ø
Ø
55Ø A(N,2)=INT(1ØØ*A(N,2))
56Ø GOSUB1Ø5Ø:A(N,3)=AD+INT(1ØØ*R*DS)/1Ø
Ø
57Ø A(N,3)=INT(1ØØ*A(N,3))
58Ø NEXTN
59Ø GOSUB78Ø:GOSUB88Ø
6ØØ FL=1:CLS:PRINT@15,"EXEC MODE":PRINT
61Ø PRINT"P=PRINT REPORT   L=LPRINT REPO
RT"
62Ø PRINT"C=CHANGE MEALS   X=RE-RANDOMIZ
E MEALS"
63Ø PRINT"D=DISPLAY DATE   S=SPECIAL"
64Ø PRINT"R=ROOM RATE      I=ITERATIVE I
NCREASES"
65Ø PRINT"T=TOTALS         E=END"
66Ø PRINTTAB(25);"YOUR CHOICE ?";:GOSUB6
Ø
67Ø IFT$="P"THEN113Ø
68Ø IFT$="L"THENLP=1:GOTO14ØØ
69Ø IFT$="C"THEN192Ø
7ØØ IFT$="X"THEN39Ø
71Ø IFT$="D"THEN2Ø3Ø
72Ø IFT$="S"THEN176Ø
73Ø IFT$="R"THEN27Ø
74Ø IFT$="I"THEN231Ø
75Ø IFT$="T"THENGOSUB78Ø:GOSUB88Ø:GOTO6Ø
Ø
76Ø IFT$="E"THENMENU
77Ø CLS:PRINT@175,RV$;"** ERROR **";NV$:
BEEP:GOTO6ØØ
78Ø BT=Ø:LT=Ø:DT=Ø:RT=Ø:ST=Ø
79Ø FORN=1TODY
8ØØ BT=BT+A(N,1)
81Ø LT=LT+A(N,2)
82Ø DT=DT+A(N,3)
83Ø RT=RT+A(N,4)
84Ø ST=ST+A(N,5)
85Ø NEXTN
86Ø UA=SD-(BT+LT+DT+RT+ST+EV)
```

continued

```
87Ø RETURN
88Ø CLS:R=6:Q=BT:PRINTTAB(5);"BREAK. = "
;:GOSUB251Ø:PRINT"     TOTALS"
89Ø R=6:Q=LT:PRINTTAB(5);"LUNCH  = ";:GO
SUB251Ø:PRINT
9ØØ R=6:Q=DT:PRINTTAB(5);"DINNER = ";:GO
SUB251Ø:PRINT
91Ø R=6:Q=RT:PRINTTAB(5);"ROOM   = ";:GO
SUB251Ø:PRINT
92Ø R=6:Q=ST:PRINTTAB(5);"SPCL.  = ";:GO
SUB251Ø:GOSUB5Ø
93Ø IFLP=ØTHENPRINT:PRINTTAB(5);"START V
ALUE   = ";
94Ø IFLP=1THENLPRINT:LPRINTTAB(5);"START
 VALUE   = ";
95Ø Q=SD:GOSUB251Ø
96Ø IFLP=ØTHENPRINT:PRINTTAB(5);"END VAL
UE     = ";
97Ø IFLP=1THENLPRINT:LPRINTTAB(5);"END V
ALUE     = ";
98Ø Q=EV:GOSUB251Ø
99Ø Q=BT+LT+DT+RT+ST
1ØØØ IFLP=ØTHENPRINT:PRINTTAB(5);"TOTAL
NOW     = ";:GOSUB251Ø:PRINT
1Ø1Ø IFLP=1THENLPRINT:LPRINTTAB(5);"TOTA
L NOW     = ";:GOSUB251Ø:LPRINT
1Ø2Ø IFLP=ØTHENPRINTTAB(5);"UNACCOUNTED
  = ";:Q=UA:GOSUB251Ø:PRINT
1Ø3Ø IFLP=1THENLPRINTTAB(5);"UNACCOUNTED
   = ";:Q=UA:GOSUB251Ø:LPRINT:RETURN
1Ø4Ø GOSUB5Ø:RETURN
1Ø5Ø R=INT(1Ø*RND(1)):IFR=5THEN1Ø5Ø
1Ø6Ø IFR>5THENR=R-5:GOTO1Ø8Ø
1Ø7Ø R=-R
1Ø8Ø IFR<ØANDR<D1THEN1Ø5Ø
1Ø9Ø IFR>ØANDR>D2THEN1Ø5Ø
11ØØ RETURN
111Ø PRINT:PRINT:PRINT
112Ø FORN=1TO15:PRINT"-";:NEXT:PRINT
113Ø :CLS:PRINT
114Ø PRINTTAB(5);"EXPENSE REPORT COVERIN
G ":PRINT:PRINTTAB(5);D1$;"  TO  ";D2$
115Ø GOSUB5Ø
116Ø FORN=1TODY
117Ø T=Ø:FORX=1TO5:T=T+A(N,X):NEXTX
118Ø R=6:Q=A(N,1):CLS:PRINTTAB(5);"BREAK
. = ";:GOSUB251Ø
119Ø T$=STR$(A(N,Ø))
12ØØ PRINT;"     DATE ";LEFT$(T$,LEN(T$)
-2);"/";RIGHT$(T$,2)
121Ø R=6:Q=A(N,2):PRINTTAB(5);"LUNCH  =
";:GOSUB251Ø:PRINT
122Ø R=6:Q=A(N,3):PRINTTAB(5);"DINNER =
";:GOSUB251Ø:PRINT
123Ø R=6:Q=A(N,4):PRINTTAB(5);"ROOM   =
";:GOSUB251Ø:PRINT
124Ø R=6:Q=A(N,5):PRINTTAB(5);"SPECIAL=
";:GOSUB251Ø
125Ø IFR$(N)<>""THENPRINT"  FOR     ";R$
(N)ELSEPRINT
126Ø R=6:Q=T:PRINTTAB(5);"TOTAL  = ";:GO
SUB251Ø:PRINT:GOSUB5Ø
127Ø NEXTN
128Ø PRINT
129Ø GOSUB78Ø
```

continued

```
13ØØ CLS:
131Ø R=6:Q=BT:PRINTTAB(5);"BREAK. TOTL."
;:GOSUB251Ø:PRINT"     ";DY;"DAYS
132Ø R=6:Q=LT:PRINTTAB(5);"LUNCH  TOTL."
;:GOSUB251Ø:PRINT
133Ø R=6:Q=DT:PRINTTAB(5);"DINNER TOTL."
;:GOSUB251Ø:PRINT
134Ø R=6:Q=RT:PRINTTAB(5);"ROOM   TOTL."
;:GOSUB251Ø:PRINT
135Ø R=6:Q=ST:PRINTTAB(5);"SPCL.  TOTL."
;:GOSUB251Ø:PRINT
136Ø R=6:Q=BT+LT+DT+RT+ST:PRINTTAB(5);"G
RAND  TOTL.";:GOSUB251Ø:PRINT
137Ø GOSUB5Ø
138Ø GOSUB93Ø
139Ø GOTO6ØØ
14ØØ LPRINT:LPRINT:LPRINT
141Ø FORN=1TO15:LPRINT"-";:NEXT:LPRINT
142Ø LPRINT:LPRINT
143Ø LPRINTTAB(1Ø);"EXPENSE REPORT COVER
ING ";D1$;"  TO  ";D2$
144Ø LPRINT:LPRINT:LPRINT
145Ø LPRINT" DATE   BREAK.  LUNCH   DINN
ER  ROOM   SPECIAL  REASON";
146Ø LPRINT"      TOTAL"
147Ø LPRINT
148Ø FORN=1TODY
149Ø L=Ø
15ØØ T$=STR$(A(N,Ø))
151Ø LPRINTLEFT$(T$,LEN(T$)-2);"/";RIGHT
$(T$,2);
152Ø FORK=1TO5:L=L+A(N,K):NEXTK
153Ø R=6:Q=A(N,1):LPRINTTAB(8);:GOSUB251
Ø
154Ø R=6:Q=A(N,2):LPRINTTAB(15);:GOSUB25
1Ø
155Ø R=6:Q=A(N,3):LPRINTTAB(23);:GOSUB25
1Ø
156Ø R=6:Q=A(N,4):LPRINTTAB(31);:GOSUB25
1Ø
157Ø R=6:Q=A(N,5):LPRINTTAB(39);:GOSUB25
1Ø
158Ø IFR$(N)<>""THENLPRINTTAB(48);R$(N);
159Ø R=7:Q=L:LPRINTTAB(59);:GOSUB251Ø:LP
RINT
16ØØ NEXTN
161Ø LPRINT
162Ø FORN=1TO65:LPRINT"=";:NEXT:LPRINT:L
PRINT
163Ø GOSUB78Ø
164Ø T$=STR$(DY):T$=RIGHT$(T$,LEN(T$)-1)
:LPRINTT$;" DAYS";
165Ø R=6:Q=BT:LPRINTTAB(8);:GOSUB251Ø
166Ø R=6:Q=LT:LPRINTTAB(15);:GOSUB251Ø
167Ø R=6:Q=DT:LPRINTTAB(23);:GOSUB251Ø
168Ø R=6:Q=RT:LPRINTTAB(31);:GOSUB251Ø
169Ø R=6:Q=ST:LPRINTTAB(39);:GOSUB251Ø
17ØØ R=7:Q=BT+LT+DT+RT+ST:LPRINTTAB(59);
:GOSUB251Ø:LPRINT
171Ø LPRINT
172Ø GOSUB93Ø:LPRINT:LPRINT
173Ø FORN=1TO15:LPRINT"-";:NEXT:LPRINT
174Ø LPRINT:LPRINT:LPRINT:LPRINT:LPRINT
175Ø LP=Ø:GOTO6ØØ
176Ø INPUT"DATE OF SPECIAL  MM,DD";MM,DD
```

continued

```
:GOSUB247Ø
177Ø IFE=1THEN176Ø
178Ø IFR$(N)=""THEN185Ø
179Ø PRINTMM;"/";DD;"SHOW ";:Q=A(N,5):GO
SUB251Ø
18ØØ PRINT" FOR ";R$(N)
181Ø PRINT"CHANGE (Y)ES OR (N)O ";:GOSUB
6Ø
182Ø IFT$="Y"THEN185Ø
183Ø IFT$="N"THEN19ØØ
184Ø IFT$<>"N"THENBEEP:GOTO181Ø
185Ø INPUT"AMOUNT OF PURCHASE ";A(N,5)
186Ø A(N,5)=INT(1ØØ*A(N,5))
187Ø IFA(N,5)=ØTHENR$(N)="":GOTO19ØØ
188Ø INPUT"REASON OF PURCHASE ";R$(N)
189Ø IFLEN(R$(N))>8THENR$(N)=LEFT$(R$(N)
,8)
19ØØ GOSUB78Ø:Q=UA:CLS:PRINT:PRINT:PRINT
"UNACCOUNTABLES ARE ";:GOSUB251Ø
191Ø PRINT:GOSUB5Ø:GOTO6ØØ
192Ø T$="":CLS:PRINT@165,"WHICH MEAL  B,
  L,  OR D ";:GOSUB6Ø
193Ø IFT$="B"ORT$="L"ORT$="D"THEN195Ø
194Ø BEEP:GOTO192Ø
195Ø IFT$="B"THENT=1
196Ø IFT$="L"THENT=2
197Ø IFT$="D"THENT=3
198Ø CLS:PRINT@16Ø,"AMOUNT OF CHANGE  (+
 OR -) X.XX";:INPUTC
199Ø C=INT(1ØØ*C)
2ØØØ FORN=1TODY:IFA(N,T)<>ØTHENA(N,T)=A(
N,T)+C
2Ø1Ø NEXTN
2Ø2Ø GOSUB78Ø:GOSUB88Ø:GOTO6ØØ
2Ø3Ø INPUT"DATE YOU WISH DISPLAYED MM,DD
";MM,DD
2Ø4Ø GOSUB247Ø:IFE=1THEN2Ø3Ø
2Ø5Ø T=Ø:FORX=1TO5:T=T+A(N,X):NEXTX
2Ø6Ø R=6:Q=A(N,1):CLS:PRINTTAB(5);"BREAK
. = ";:GOSUB251Ø
2Ø7Ø T$=STR$(A(N,Ø))
2Ø8Ø PRINT;"     DATE ";LEFT$(T$,LEN(T$)
-2);"/";RIGHT$(T$,2)
2Ø9Ø R=6:Q=A(N,2):PRINTTAB(5);"LUNCH  =
";:GOSUB251Ø:PRINT
21ØØ R=6:Q=A(N,3):PRINTTAB(5);"DINNER =
";:GOSUB251Ø:PRINT
211Ø R=6:Q=A(N,4):PRINTTAB(5);"ROOM   =
";:GOSUB251Ø:PRINT
212Ø R=6:Q=A(N,5):PRINTTAB(5);"SPECIAL=
";:GOSUB251Ø
213Ø IFR$(N)<>""THENPRINT"  FOR     ";R$
(N)ELSEPRINT
214Ø R=6:Q=T:PRINTTAB(5);"TOTAL  = ";:GO
SUB251Ø:PRINT:GOSUB5Ø
215Ø CLS:PRINT@165,"CHANGE VALUE  (Y)ES
OR (N)O ";:GOSUB6Ø
216Ø IFT$<>"Y"ANDT$<>"N"THENBEEP:GOTO215
Ø
217Ø IFT$="N"THENGOSUB78Ø:GOTO6ØØ
218Ø T$="":CLS:PRINT@165,"B/L/D/R/S ";:G
OSUB6Ø
219Ø IFT$="B"ORT$="L"ORT$="D"ORT$="R"ORT
$="S"THEN221Ø
22ØØ BEEP:GOTO218Ø
```

continued

```
221Ø CLS:PRINT@165,"NEW VALUE IS  ";:INP
UTK
222Ø K=INT(1ØØ*K)
223Ø IFT$="B"THENP=1
224Ø IFT$="L"THENP=2
225Ø IFT$="D"THENP=3
226Ø IFT$="R"THENP=4
227Ø IFT$="S"THENP=5
228Ø IFP=5ANDK<>ØANDR$(N)=""THENINPUT"RE
ASON OF PURCHASE";R$(N)
229Ø A(N,P)=K:IFP=5ANDK=ØTHENR$(N)=""
23ØØ GOTO2Ø6Ø
231Ø GOSUB78Ø:PRINT"UNACCOUNTABLES ARE $
";:Q=UA:GOSUB251Ø
232Ø PRINT:INPUT"REDUCE TO WHAT VALUE";T
233Ø T=INT(1ØØ*T)
234Ø IFT>UATHENPRINT"**MUST BE LESS**:BE
EP:GOTO2Ø9Ø
235Ø CLS:Z=1ØØØ:R=7
236Ø PRINT@176,RV$;Z;NV$;:IFZ*3*DY>ABS(U
A-T)THENZ=Z-1:GOTO236Ø
237Ø IFZ=ØTHENZ=1
238Ø CLS:PRINT@165,"ITERATING BY";:Q=Z:G
OSUB251Ø:PRINT
239Ø FORX=1TODY
24ØØ FORY=1TO3
241Ø IFA(X,Y)<>ØTHENA(X,Y)=A(X,Y)+Z
242Ø GOSUB78Ø
243Ø IFUA<=TTHENPRINT:GOSUB88Ø:GOTO6ØØ
244Ø NEXTY:NEXTX
245Ø IFZ<>ØTHENZ=Z-1:CLS:GOTO236Ø
246Ø GOTO239Ø
247Ø FORN=1TODY:IFA(N,Ø)=MM*1ØØ+DDTHENE=
Ø:RETURN
248Ø NEXTN:E=1
249Ø PRINT"NO SUCH DATE AS ";MM;"/";DD:R
ETURN
25ØØ PRINT2271;Q$
251Ø Q$=STR$(Q):Q$=RIGHT$(Q$,LEN(Q$)-1)
252Ø IFQ=ØTHENQ$="Ø.ØØ":GOTO258Ø
253Ø IFLEN(Q$)=2THENQ$="."+Q$
254Ø IFLEN(Q$)=1THENQ$=".Ø"+Q$
255Ø IFQ<ØTHENQ$="-"+Q$
256Ø IFLEFT$(Q$,1)="."ORLEFT$(Q$,2)="-."
THEN258Ø
257Ø Q$=LEFT$(Q$,LEN(Q$)-2)+"."+RIGHT$(Q
$,2)
258Ø R=R-LEN(Q$)
259Ø IFLP=ØANDR>ØTHENPRINT" ";:R=R-1:GOT
O259Ø
26ØØ IFLP=1ANDR>ØTHENLPRINT" ";:R=R-1:GO
TO26ØØ
261Ø IFLP=ØTHENPRINTQ$;:IFR=-99THENPRINT
SPC(5);
262Ø IFLP=1THENLPRINTQ$;:IFR=-99THENLPRI
NTSPC(5);
263Ø RETURN
```

End of listing.

COMPATIBILITY: Tandy 100/102/200 (Tandy 600, NEC PC-8201A/8300 available on GEnie Laptops RT)

And How Long Till Christmas Now, Daddy?

Here's how to answer even to your child's satisfaction.

by Ted McKosky, Jr.

Yes, Virginia, there is a Santa Claus, and he will be here in exactly 6,710,614 seconds from the time I started writing this article. You, too, can be privy to this important information once you have *SANTA.BA* up and running on your Model 100.

The program is really quite simple except for a few curves thrown by the people who worked out the calendar. The basic problem involves figuring out how many seconds there are between right now and Christmas, a pretty straightforward problem. Convert today's date into the number that represents that day of the year; then subtract that number from 358. (I'm assuming that Santa arrives a hair's breadth after midnight of the 24th.) This is done in lines 470 through 620—a somewhat primitive solution, but it works.

I didn't think there would be any interest in ol' St. Nick *after* he arrived.

When I first wrote the program, I didn't think there would be any interest in ol' St. Nick *after* he arrived, at least not for quite some time. But I found people checking the day after Christmas, and the disappointed looks on their faces forced me to add lines 50 and 620. Line 50 tells the program to look at next year, and line 620 corrects the day of the year for the dates that fall between December 25th and December 31st.

Line 70 checks for leap year and then adjusts the day of the year that Christmas falls on. Line 600 does the same thing and then increases the year of the day by one after February.

Lines 240 through 320 calculate the time remaining before midnight to determine the fractional part of the day left. Lines 340 through 370 calculate the seconds until Santa's arrival, and from that, the days, hours and minutes.

```
1 'SANTA.BA from Barking Dog Software
2 '(C) 1987 Ted McKosky
3 'GEnie address T.MCKOSKY
4 'Home Board BIS (7Ø3) 951-292Ø
1Ø CLS
2Ø YR = 19ØØ+VAL(RIGHT$(DATE$,2))
3Ø XM=358
4Ø 'Looks for date between 12/25 and 12/
31 to increment the year
5Ø IF LEFT$(DATE$,5) >"12/24" AND LEFT$(
DATE$,5) < "12/32" THEN YR =YR+1
6Ø 'Fix Christmas position during Leap Y
ear
7Ø IF YR MOD 4=Ø AND YR MOD 1ØØ><Ø THEN
XM=XM+1
8Ø GOSUB 47Ø
9Ø LINE(72,5)-(17Ø,17),1,B
1ØØ 'Draws the Christmas tree
11Ø Y=2ØØ: Y2=2ØØ
12Ø FOR X=3Ø TO 57 STEP2
13Ø Y = Y-1: Y2=Y2+1
14Ø LINE(Y,X)-(Y2,X)
15Ø NEXT X
16Ø LINE(197,57)-(2Ø3,63),1,B
17Ø PRINT @153,"*"
18Ø 'Draws Christmas graphic
19Ø FOR X = 1 TO 244
2ØØ READ X1,Y1,X2,Y2
21Ø LINE(X1,Y1)-(X2,Y2)
22Ø NEXT X
23Ø 'Calculates the seconds until midnig
ht
24Ø H=23-VAL(LEFT$(TIME$,2))
25Ø PRINT @153,"*"
26Ø 'Sets the time delay increase CT=2Ø
```

continued

Listing 1. SANTA.BA. *Amaze your friends and family with a program that shows the exact time until Santa arrives.*

Lines 390 through 440 display the results of the time calculations and then refresh the screen so the numbers are kept up to date. If you are thinking about converting *SANTA.BA* for other computers, watch out for the *PRINT@* statements. (By the way, when typing *DATA* lists like this, I have found it really helpful to read them orally into a tape recorder at my typing speed and then play it back while I type the numbers in.)

Since a Christmas program contains more than numbers, lines 110 through 220 create the special graphics that accompany the time display. The Christmas tree was pretty simple, but Santa took some work. His image is contained in the *DATA* statements at the end of the program. These numbers are the coordinates for the *LINE* statement in line 210.

The trick is determining the coordinates. I did this by printing the image on graph paper and defined the relative coordinates—not one of the most pleasant tasks you can imagine, I'm sure, but it really adds a finishing touch to the display. While enduring this tedium, I conceptualized a much easier way to do this, which eventually led to the development of a system that allows complex graphics to be created easily for the Model 100. But *that*, Virginia, is another story. ...

Feel free to contact me with any questions or comments in the LapTops RoundTable on GEnie. *SANTA.BA* can also be found there for you to download. My GEnie address is *TMCKOSKY*, or you can contact me through the BIS BBS at (703) 951-2920.

Ted McKosky, Jr., is the Associate Director of Telecommunications and an assistant professor at Radford University in Radford, VA; he manages the college radio station, WVRU, and is assistant sysop at GEnie's Laptops RoundTable.

```
to increase display time
270 CT=CT+1: IF CT=20 THEN MENU
280 M=59-VAL(MID$(TIME$,4,2))
290 S=60-VAL(RIGHT$(TIME$,2))
300 SH=(H*60)*60
310 SM=M*60
320 TS=SH+SM+S
330 'Calculates the time until Christmas
340 CS=((XM-YD)*86400!)+TS
350 HC=CS/3600
360 MC=CS/60
370 PD=TS/86400!
380 'Display the time left until Christm
as
390 PRINT @53,"Santa comes in:"
400 PRINT @135,USING"###";XM-YD;:PRINT @
138,USING".####";PD;:PRINT" days"
410 PRINT @173,USING"#####.####";HC;:PRI
NT" hours"
420 PRINT @212,USING"######.####";MC;:PR
INT" minutes"
430 PRINT @252,USING"##########";CS;:PRI
NT" seconds"
440 PRINT @153," ":FOR T=1 TO 30: NEXT T
:GOTO 230
450 END
460 'Calculates the day of the year
470 IF LEFT$(DATE$,2) = "01" THEN YD = V
AL(MID$(DATE$,4,2))
480 IF LEFT$(DATE$,2) = "02" THEN YD = 3
1+VAL(MID$(DATE$,4,2))
```

continued

```
490 IF LEFT$(DATE$,2) = "03" THEN YD = 5
9+VAL(MID$(DATE$,4,2))
500 IF LEFT$(DATE$,2) = "04" THEN YD = 9
0+VAL(MID$(DATE$,4,2))
510 IF LEFT$(DATE$,2) = "05" THEN YD = 1
20+VAL(MID$(DATE$,4,2))
520 IF LEFT$(DATE$,2) = "06" THEN YD = 1
51+VAL(MID$(DATE$,4,2))
530 IF LEFT$(DATE$,2) = "07" THEN YD = 1
81+VAL(MID$(DATE$,4,2))
540 IF LEFT$(DATE$,2) = "08" THEN YD = 2
12+VAL(MID$(DATE$,4,2))
550 IF LEFT$(DATE$,2) = "09" THEN YD = 2
43+VAL(MID$(DATE$,4,2))
560 IF LEFT$(DATE$,2) = "10" THEN YD = 2
73+VAL(MID$(DATE$,4,2))
570 IF LEFT$(DATE$,2) = "11" THEN YD = 3
04+VAL(MID$(DATE$,4,2))
580 IF LEFT$(DATE$,2) = "12" THEN YD = 3
34+VAL(MID$(DATE$,4,2))
590 'Corrects for Leap Year
600 IF LEFT$(DATE$,2)> "02" AND YR MOD 4
=0 AND YR MOD 100><0 THEN YD=YD+1
610 'Creates day of year when date falls
 between 12/25 and 12/31
620 IF LEFT$(DATE$,5) >"12/24" AND LEFT$
(DATE$,5) < "12/32" THEN FX = 31-VAL(MID
$(DATE$,4,2)): YD = - FX
630 RETURN
640 'Graphics coordinates
650 DATA 43, 1,47, 1,40, 2,50, 2,38, 3,5
2, 3,36, 4,54, 4,35, 5,55, 5,33, 6,58, 6
660 DATA 31, 7,49, 7,58, 7,60, 7,29, 8,4
6, 8,60, 8,61, 8,27, 9,44, 9,61, 9,62, 9
670 DATA 25,10,43,10,62,10,63,10,24,11,4
3,11,63,11,63,11,23,12,42,12,63,12,64,12
680 DATA 22,13,41,13,64,13,64,13,21,14,4
1,14,64,14,65,14,20,15,40,15,65,15,66,15
690 DATA 19,16,39,16,66,16,66,16,19,17,3
9,17,66,17,67,17,18,18,38,18,67,18,67,18
700 DATA 18,19,38,19,67,19,68,19,18,20,3
7,20,68,20,68,20,17,21,37,21,68,21,68,21
710 DATA 17,22,36,22,68,22,68,22,17,23,3
6,23,53,23,61,23,68,23,68,23,16,24,35,24
720 DATA 50,24,53,24,61,24,64,24,67,24,6
8,24,16,25,35,25,43,25,55,25,64,25,67,25
730 DATA 16,26,34,26,39,26,43,26,47,26,4
8,26,56,26,56,26,65,26,66,26,16,27,34,27
740 DATA 37,27,39,27,42,27,42,27,46,27,4
6,27,57,27,57,27,63,27,66,27,15,28,37,28
750 DATA 41,28,42,28,45,28,45,28,48,28,5
4,28,57,28,57,28,61,28,62,28,67,28,67,28
760 DATA 15,29,32,29,41,29,41,29,45,29,4
7,29,55,29,56,29,60,29,60,29,68,29,68,29
770 DATA 15,30,32,30,41,30,41,30,59,30,5
9,30,63,30,67,30,15,31,35,31,40,31,41,31
780 DATA 46,31,46,31,48,31,53,31,59,31,6
2,31,64,31,64,31,15,32,30,32,35,32,36,32
790 DATA 40,32,40,32,47,32,48,32,50,32,5
1,32,53,32,54,32,59,32,59,32,61,32,62,32
800 DATA 64,32,64,32,15,33,29,33,33,33,3
4,33,36,33,36,33,40,33,40,33,45,33,46,33
810 DATA 50,33,51,33,59,33,62,33,64,33,6
5,33,15,34,29,34,32,34,32,34,36,34,36,34
```

continued

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```
82Ø DATA 4Ø,34,4Ø,34,48,34,52,34,6Ø,34,6
Ø,34,65,34,65,34,15,35,29,35,32,35,32,35
83Ø DATA 4Ø,35,4Ø,35,47,35,47,35,53,35,5
3,35,6Ø,35,6Ø,35,65,35,66,35,15,36,29,36
84Ø DATA 32,36,32,36,4Ø,36,4Ø,36,46,36,4
6,36,54,36,54,36,6Ø,36,6Ø,36,66,36,66,36
85Ø DATA 15,37,27,37,29,37,29,37,32,37,3
2,37,4Ø,37,4Ø,37,42,37,42,37,46,37,46,37
86Ø DATA 6Ø,37,61,37,66,37,66,37,15,38,2
7,38,29,38,3Ø,38,33,38,33,38,4Ø,38,4Ø,38
87Ø DATA 42,38,42,38,55,38,55,38,61,38,6
1,38,66,38,66,38,7Ø,38,7Ø,38,14,39,26,39
88Ø DATA 3Ø,39,3Ø,39,34,39,34,39,4Ø,39,4
Ø,39,42,39,43,39,57,39,58,39,61,39,61,39
89Ø DATA 65,39,66,39,68,39,7Ø,39, 9,4Ø,2
5,4Ø,3Ø,4Ø,31,4Ø,4Ø,4Ø,45,4Ø,54,4Ø,61,4Ø
9ØØ DATA 65,4Ø,65,4Ø,67,4Ø,68,4Ø,7Ø,4Ø,7
Ø,4Ø, 7,41, 9,41,14,41,24,41,31,41,32,41
91Ø DATA 36,41,36,41,41,41,42,41,45,41,5
4,41,61,41,67,41,7Ø,41,7Ø,41, 6,42, 7,42
92Ø DATA 13,42,23,42,32,42,36,42,42,42,4
3,42,69,42,7Ø,42, 5,43, 6,43,16,43,22,43
93Ø DATA 36,43,36,43,43,43,44,43,68,43,6
9,43, 5,44, 5,44,17,44,2Ø,44,36,44,36,44
94Ø DATA 44,44,46,44,53,44,59,44,66,44,6
8,44, 4,45, 5,45,18,45,18,45,36,45,37,45
95Ø DATA 46,45,53,45,59,45,66,45, 3,46,
4,46,18,46,18,46,37,46,37,46,51,46,52,46
96Ø DATA 54,46,58,46,6Ø,46,61,46,66,46,6
```

continued

```
7,46, 3,47, 3,47,18,47,19,47,37,47,37,47
97Ø DATA 52,47,52,47,6Ø,47,6Ø,47,67,47,6
8,47, 2,48, 3,48,19,48,19,48,37,48,38,48
98Ø DATA 52,48,53,48,59,48,6Ø,48,67,48,6
8,48, 2,49, 2,49,19,49,19,49,21,49,31,49
99Ø DATA 38,49,38,49,53,49,59,49,68,49,6
8,49, 2,5Ø, 2,5Ø,19,5Ø,34,5Ø,38,5Ø,39,5Ø
1ØØØ DATA 68,5Ø,68,5Ø, 2,51, 2,51,18,51,
37,51,39,51,39,51,68,51,68,51, 2,52, 3,5
2
1Ø1Ø DATA 18,52,4Ø,52,68,52,69,52, 3,53,
 3,53,17,53,41,53,69,53,69,53, 3,54, 4,5
4
1Ø2Ø DATA 15,54,43,54,69,54,69,54, 4,55,
 6,55,13,55,44,55,69,55,7Ø,55, 6,56, 7,5
6
1Ø3Ø DATA 11,56,45,56,7Ø,56,7Ø,56, 7,57,
46,57,7Ø,57,7Ø,57,1Ø,58,47,58,7Ø,58,71,5
8
1Ø4Ø DATA 1Ø,59,48,59,71,59,71,59,1Ø,6Ø,
49,6Ø,71,6Ø,71,6Ø, 9,61,5Ø,61,71,61,72,6
1
1Ø5Ø DATA  9,62,51,62,72,62,72,62, 9,63,
52,63,72,63,73,63
1Ø6Ø END
```

End of listing.

Taming The 200

This one is souped-up and civilized.

by Michael Heim, Ph.D.

Forget other laptops, the Tandy 200 is the writer's perfect companion. Not just fresh off the shelf, but once it's properly tamed. With a few enhancements and a careful setup, the Tandy 200 outdoes Toshiba and NEC when it comes to writing in the portable mode.

As a writer, I need a light-weight computer, one I can stash in a knapsack or briefcase. If it weighs over six pounds, forget it. It has to be lightweight so I don't get a backache walking to my office or across campus. And a truly companionable computer doesn't need booting up with a separate DOS system or special word processing program every time I want to use it. Just press a button for instant-on.

I don't want to be chained to wall sockets. The computer's portable power should last at least thirty hours or more, so I don't have to worry about batteries or electrical outlets while I'm working. Also important is the ability for easy uploading to the IBM desktop so I can store files for further processing. And it helps if the computer is so rugged that I can drop it on the patio, pick it up, and keep on computing.

Besides freedom from a tiresome disk-operating system (DOS), I need a built-in outliner or idea processor that I can use on the run. When I'm working on an article or report, I turn to my idea processor and continue organizing or rearranging notes. Then I hit the power button to avoid battery loss or let the pre-set *POWER* timer do it automatically in two minutes. Later, I hit the button again and the outline pops up on screen, waiting for the next set of ideas. No program loading, no battery loss.

I need a screen that displays letters so big and comfortable that I don't have to wear my glasses if I don't feel like it or if I'm working in bed. No phosphorescent light to tire the eyes. I need a big screen I can see when tilted to my viewing angle, not one for presenting graphics or text for other eyes to see.

Finally, I need plenty of storage space so I can run a calendar-appointment program as well as keep on tap my 200K of chapters and works-in-progress.

Ok, you might say, I've just written the job description of the Model 100/102 outfitted with Super ROM and a PG Design RAM bank, powered by two A.R.M.S. NiCd battery add-ons.

I did find great usefulness for my old Model 100. That little computer accompanied me everywhere for years, even abroad. It went with me to the Acropolis in Athens in 1984 where, perched on my knees as I sat on the ancient stones, the 100 held the first chapters of *Electric Language: A Philosophical Study of Word Processing*, the first book about the impact of software on human thought processes. This same M100 now keeps track of checks, dials phone numbers, and is in general a secondary resource. But the Model 200 is now my daily companion—simply because its screen offers much more to work with. But straight off the shelf the 200 is far from an ideal notebook,

```
1 F$="TASK.DO":CALL61162,13,VARPTR(F$):C
ALL61162,23,VARPTR(F$):F$="DIARY.DO":CAL
L61162,13,VARPTR(F$):CALL61162,23,VARPTR
(F$)
3 CLEAR1000:MAXFILES=3:DEFINTB-Z:DEFSTRA
,C-E,G,L,Q,T,V:DF="TASK.DO":M$="JanFebMa
rAprMayJunJulAugSepOctNovDec":DG="012345
6789":D="SunMonTueWedThuFriSat":Q="3032323
2332323"
7 E=CHR$(27):VI=E+CHR$(112):VO=E+CHR$(11
3):ET=E+"T":EU=E+"U":EP=E+"P":EQ=E+"Q":E
J=E+"J":EK=E+"K":AR=CHR$(8)+CHR$(29)+CHR
$(28)+CHR$(30)+CHR$(31)+CHR$(1)+CHR$(6)+
CHR$(20)+CHR$(2)+CHR$(17)+CHR$(18)+CHR$(
23)+CHR$(26)+CHR$(127)
10 M=VAL(LEFT$(DATE$,2)):D%=VAL(MID$(DAT
E$,4,2)):YY=VAL(RIGHT$(DATE$,2))+1900:L1
="View          Prev Next      Sort Men
u":L2="":L3="":L4=""
15 ONKEYGOSUB74,142,144,146,149,,154,166
:KEYON
16 KEYSTOP:PRINTVO;EQ;:ZZ=YY-1900
17 IFZZ/4=INT(ZZ/4)THENMID$(Q,2,1)="1"EL
SEMID$(Q,2,1)="0"
18 Z=M:P=M:IFZ<3THENZ=Z+12:YY=YY-1
19 Z=Z+1
20 RS=0:D!=INT(365.25*YY)-INT(YY/100)+IN
T(YY/400)+INT(30.6*Z)+1-478164
21 W=INT(7.1*(D!/7-INT(D!/7)))+1:ML=28+V
AL(MID$(Q,M,1)):YY=ZZ+1900
22 CLS:PRINT@200,"  S  M  T  W  T  F  S"
23 J=2-W
24 FORX=1TO7
25 IFJ=D%THENPA=CSRLIN*40+POS(0):PD=X:PT
=J
26 IFJ<1ORJ>MLTHENPRINT"   ";ELSEPRINTUS
ING" ##";J;
27 J=J+1:NEXTX:PRINT" "
28 IFJ<=MLTHEN24ELSEO=0:LINE(153,5)-(205
,33),1,B
29 PRINT@67,MID$(M$,(M-1)*3+1,3)" "MID$(
STR$(ZZ),2)
30 PRINTEU;:PRINT@600,ET;L1;:KEYON
```

Continued

Listing 1. The calendar program TIME.BA. *The last line contains a strange left bracket before* MENU. *This strategy is required for running all* .BA *files in RAM from the Node Datapac to prevent corrupting the* RAMDSK *that calls up Node. This program also illustrates the way* .CO *files should be handled from the Node.*

because it needs several enhancements and has to be set up carefully.

However, taming the 200 required that I unleash some of its power, similar in some ways to developing its sibling 100/102. With both, I need Super ROM installed. The advertising claims are right; Super ROM from PCSG is indispensable for the tamed 100/200. Also, the *THOUGHT* idea processor surpasses all other outliners—public domain or commercial—by its speed and functionality. I've tried them all on the IBM, and idea processing is best done on Super. Once I install Super, I can format and print text from the computer as well as work with *Lucid*, a fine integrated spreadsheet/database.

Besides Super, the 200 needs mounds of additional memory. The three banks of nineteen available kilobytes are puny. So you can order the Node Datapac with 256K of luxurious file space, enough room for a small book or several chapters of a large one.

COMPATIBILITY CONFLICTS

But here lurk compatibility problems. Off the shelf, Node and Super do not mix. Each requires a ROM chip for installation, where unfortunately only one ROM socket is open for business on the 200. Which gets it? On the ideal computer you must have both.

Getting around this dilemma requires another add-on, the Safe ROM adaptor from PG Design. Safe makes it possible to use more than one snap-in ROM; you can switch between ROM's using its small software program.

The three banks of nineteen available kilobytes are puny.

Good enough, but there's another problem. The Safe ROM sockets are contained in a plastic housing that attaches underneath the computer. Safe is designed to fit underneath at the rear, bottom of the computer in the same spot occupied by the Node Datapac. Again, which gets it? Here you can make a minor adjustment and eat your cake too. Even a technoklutz like me can remove the four screws holding in the IC board of the Safe, turn the board 180 degrees around, and replace it in the housing. Now Safe can fit at the front end of the computer. Since Safe is the same thickness as the Node pack, they balance out each other nicely, making the computer sit up level at your fingertips.

Now you have 256K of memory and Super installed. But wait! There is another hitch—at least there was for me because I had three banks installed in the 200. The software for accessing the Node Datapac (*RAMDSK*), the software for switching ROM's in Safe, and the software access code for Super do not live peaceably together. I got frequent cold starts in one or two banks of the 200 when I turned the computer off and on several times. Cold starts are disconcerting even if you find ways of protecting your data, such as always storing it in the Node Datapac when

```
31 IFRSTHEN15ELSEPRINTVI;
32 IFRSTHEN15ELSEPRINT@PA,USING" ## ";PT
;:PRINTVO;
33 IFRSTHEN15ELSECM=INKEY$:IFLEN(CM)=ØTH
ENFORX=1TO25:NEXTX:GOTO31
34 IFCM=" "THENCM=CHR$(28)
35 IFCM=CHR$(13)THENGOSUB74:GOTO15
36 ONINSTR(AR,CM)+1GOTO37,38,38,44,49,54
,38,44,49,54,38,44,49,54,38
37 GOTO31
38 PRINT@PA,USING" ## ";PT;:PA=PA-3:D%=D
%-1:IFD%>ØTHEN42
39 M=M-1:IFM<1THENYY=YY-1:M=12
4Ø D%=28+VAL(MID$(Q,M,1)):IFYY/4=INT(YY/
4)ANDM=2THEND%=D%+1
41 GOTO15
42 P1=PAMOD4Ø:PT=D%:IFP1<ØORP1>18THENPA=
PA-19
43 GOTO31
44 PRINT@PA,USING" ## ";PT;:PA=PA+3:D%=D
%+1:IFD%<=MLTHEN47
45 D%=1:M=M+1:IFM>12THENM=1:YY=YY+1
46 GOTO15
47 PT=D%:P1=PAMOD4Ø:IFP1>18THENPA=INT(PA
/4Ø)*4Ø+4Ø
48 GOTO31
49 REM
5Ø PRINT@PA,USING" ## ";PT;:D%=D%-7:PA=P
A-4Ø:IFD%>ØTHEN42
51 M=M-1:IFM<1THENYY=YY-1:M=12
52 D%=D%+28+VAL(MID$(Q,M,1)):IFM=2ANDYY/
4=INT(YY/4)THEND%=D%+1
53 GOTO15
54 REM
55 PRINT@PA,USING" ## ";PT;:D%=D%+7:PA=P
A+4Ø:IFD%<=MLTHEN47
56 M=M+1:IFM>12THENYY=YY+1:M=1
57 D%=D%-ML:GOTO15
58 FD=-1:PS=Ø:DL="/"
59 GOSUB63
6Ø IFPS=ØTHENRETURN
61 IFD1=DTTHENFD=Ø:RETURN
62 GOTO59
63 PS=INSTR(PS+1,A,DL):IFPS=ØTHENRETURN
64 D1="ØØ/Ø ":MID$(D1,3,1)=DL
65 IFPS>1THENMID$(D1,2,1)=MID$(A,PS-1,1)
66 IFPS>2THENMID$(D1,1,1)=MID$(A,PS-2,1)
67 IFPS<LEN(A)THENMID$(D1,4,1)=MID$(A,PS
+1,1)
68 IFPS<LEN(A)-1THENMID$(D1,5,1)=MID$(A,
PS+2,1)
69 IFINSTR(DG,MID$(D1,1,1))=ØTHENMID$(D1
,1,1)="Ø"
7Ø IFINSTR(DG,MID$(D1,2,1))=ØTHENMID$(D1
,1,2)="ØØ"
71 IFINSTR(DG,MID$(D1,4,1))=ØTHENMID$(D1
,4,2)="ØØ"
72 IFINSTR(DG,MID$(D1,5,1))=ØTHENMID$(D1
,4,2)="Ø"+MID$(D1,4,1)
73 RETURN
74 KEYSTOP:RR=Ø:PRINTVO;:CLS
75 DW=MID$(D,PAMOD4Ø+1,3)
76 ONKEYGOSUB141,141,141,141,141,141,141
,139:KEYON
77 CLOSE:OPENDFFORINPUTAS1
```

Continued

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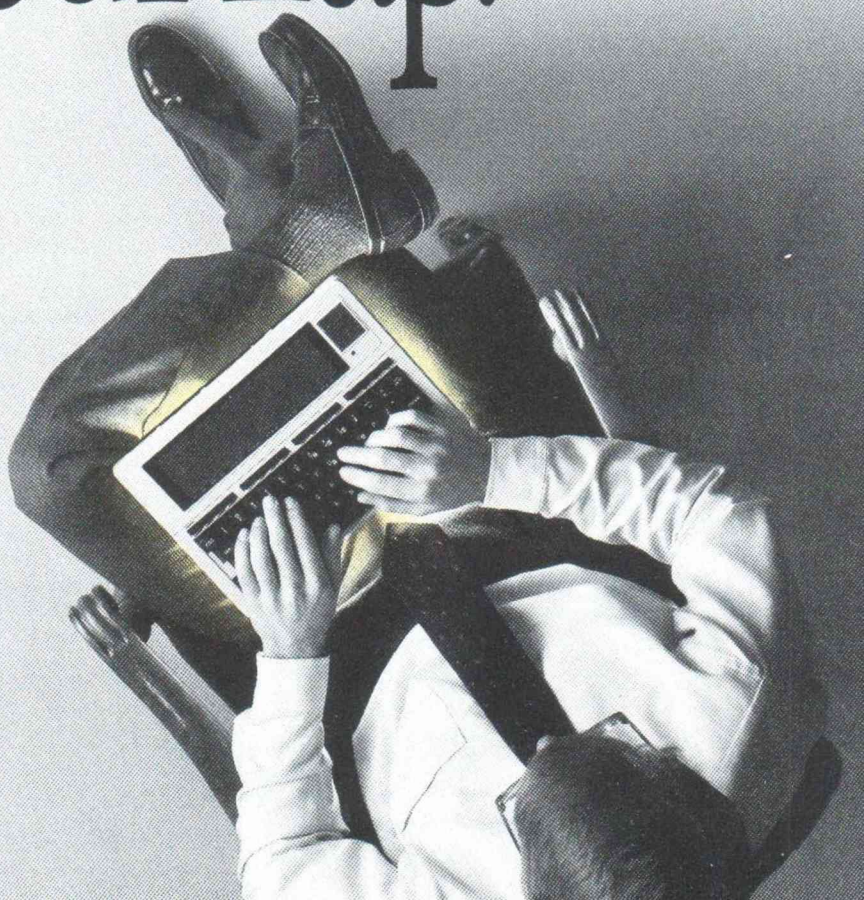

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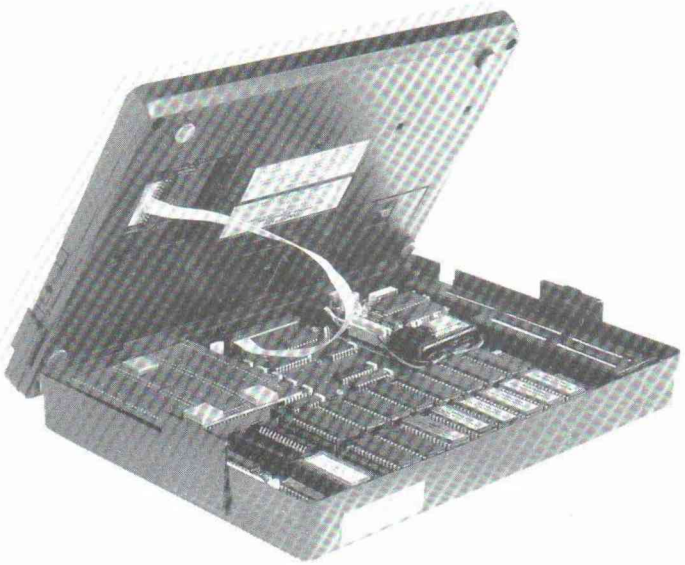

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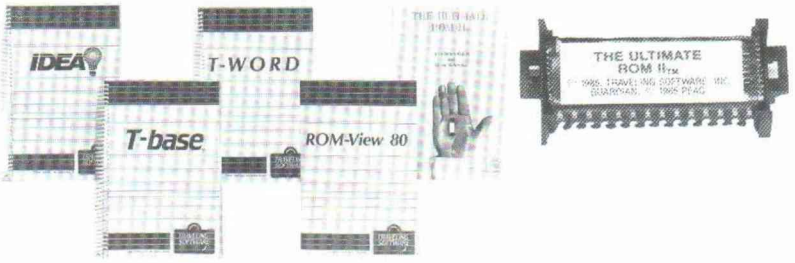
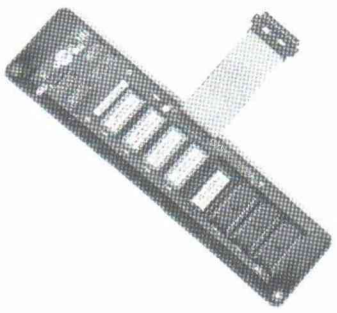


THE ULTIMATE ROM II



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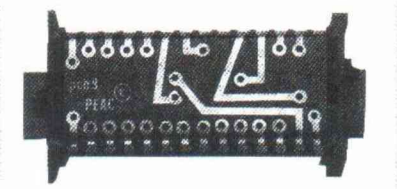

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SARDINE 4 ROM Set for Booster Pak	RS1-SD3	RS1-SD3				
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LAP-DOS II	PC1-LD1	PC1-LD1	PC1-LD1	PC1-LPD1		PC1-LD1
WORLDPORT 1200	HW1-MO2	HW1-MO2	HW1-MO2	HW1-MO2		HW1-MO3
WORLDPORT 2400	HW1-MO7	HW1-MO7	HW1-MO7	HW1-MO7		HW1-MO6
8K Memory Chip	HW1-RC1	HW2-RC1		HW1-NE1		
24K Memory Chip			HW1-RC4			
TS-DOS Disk	RS1-TS1	RS1-TS1	RS3-TS1	NE1-TS1		
TS-DOS ROM Chip	RS1-TS2	RS1-TS2	RS3-TS2	NE1-TS2		
ROM2/CLEASEAU ASSEMBLER	RS1-CL1	RS1-CL1	RS3-CL1	NE1-CL1		
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```
78 DT=RIGHT$("Ø"+MID$(STR$(M),2),2)+"/"+
RIGHT$("Ø"+MID$(STR$(D%),2),2)
79 NE=Ø:NM=Ø:ND=Ø
8Ø FL=Ø:IFEOF(1)THEN88
81 NE=NE+1:LINEINPUT#1,A
82 GOSUB58:IFFDTHEN8ØELSEKEYSTOP
83 PRINTEU;:PRINT@6ØØ,ET;L2;:PRINT@Ø,"Di
ary for "DT" ("DW"):";
84 NM=NM+1:PRINT@8Ø,A;EJ;:RR=Ø:KK=Ø:ONKE
YGOSUB14Ø,141,141,94,126,,141,139:KEYON:
FL=-1
85 G=INKEY$:IFRSTHEN139
86 G=INKEY$:IFRRTHENNM=NM-1:GOTO83
87 G=INKEY$:IFKKTHEN8ØELSE85
88 IFNM=ØTHENPRINT@4Ø,DT" not found in "
DF" file"EJ;ELSEPRINT@8Ø,USING"#### entr
ies found";NM;:PRINTEJ
89 IFND>ØTHENPRINTUSING"#### entries del
eted";ND
9Ø PRINT@6ØØ,ET;L3;
91 ONKEYGOSUB141,141,141,141,126,141,141
,139:KEYON:FL=Ø
92 G=INKEY$:IFRSTHEN139ELSEIFRRTHEN74ELS
E92
93 GOTO139
94 KEYSTOP:IFNOTFLTHENKEYON:RETURNELSEFL
=Ø
95 PRINTEU;:PRINT@295,ET;VI;"Chg";VO;
96 ONKEYGOSUB141,141,141,141,141,141,141
,139
97 PRINT@6ØØ,ET;L4;
98 PRINT@8Ø,EP;:LI=STRING$(255,Ø):MID$(L
I,1,LEN(A))=A:I=1:IFFATHEN112
99 KEYON:IFRSTHEN123
1ØØ CH=INKEY$:IFLEN(CH)=ØTHEN99
1Ø1 KEYSTOP:X=ASC(CH):ONINSTR(AR,CH)+1GO
TO1Ø2,1Ø8,1Ø8,11Ø,1Ø2,1Ø2,111,112,1Ø2,1Ø
2,111,112,1Ø2,1Ø2,1Ø7
1Ø2 IFX=13THEN115
1Ø3 IFX=9THENMID$(LI,I,1)=CH:I=I+1:GOTO1
14
1Ø4 IFX=27THEN113
1Ø5 IFX<32ORX>126THENBEEPELSETC=MID$(LI,
I,1):MID$(LI,I,1)=CH:I=I+1:IFTC=CHR$(9)T
HEN114ELSEPRINTCH;
1Ø6 GOTO99
1Ø7 MID$(LI,I,255-I)=MID$(LI,I+1)+CHR$(Ø
):GOTO114
1Ø8 IFI=1THEN99ELSEI=I-1
1Ø9 X=ASC(MID$(LI,I,1)):IFX<32ORX>126THE
N114ELSEPRINTCHR$(8);:GOTO99
11Ø CH=MID$(LI,I,1):GOTO1Ø1
111 I=1:GOTO114
112 I=INSTR(LI,CHR$(Ø)):GOTO114
113 MID$(LI,I,255-I)=" "+MID$(LI,I,255-I
)
114 PRINT@8Ø,EQ;MID$(LI,1,I-1);:PB=CSRLI
N*4Ø+POS(Ø):PRINTMID$(LI,I)EJ;:PRINT@PB,
EP;:GOTO99
115 PRINTEQ;:I=INSTR(LI,CHR$(Ø))-1
116 IFI<1THENI=255ELSEIFI=ØTHEN123
117 LI=LEFT$(LI,I):IFFATHEN127
118 CLOSE:OPEN"TP"FOROUTPUTAS2
119 OPENDFFORINPUTAS1:N=Ø
12Ø IFEOF(1)THEN122ELSELINEINPUT#1,L:N=N
```

finished (because the Node remains solid as a rock through everything—cold, warm, any kind of start). The way around this incompatibility is simple, I discovered: remove all but the original memory module (bank 1) of the 200. The conflict is caused by competing attempts to access the alternate LCD buffer, related to bank switching. I'm not expert enough to describe the problem in detail, nor have I found anyone yet who can. But I have found that the cold-start problems disappear when the memory chips for the other two banks are removed.

Also observe this other caution when you take this route to enhancing the 200. Machine-language programs (files that end with *.CO*) mess up access to the Node Datapac unless you take a precaution. The best way to handle machine programs is to keep them stored in the Node, bring them into the working RAM bank (number 1), run them, and then kill them from working RAM. You can do this automatically from a *BASIC* program by using the calls supplied by Node. (See the good article about the technical side of the Node Datapac by William Sarjeant, *PICO* magazine, October '87, p. 22.)

As an example of how to run programs from the Node, I list here my customized calendar-appointment program, *TIME.BA* (see Listing 1). *TIME.BA* uses *SORT.CO*. (See Listing 2 for *SORT.BA*, which creates *SORT.CO*.) When you press *F7* in the *TIME* program, the computer sorts the current *TASK.DO* file according to date; it appends all dates prior to the current date to a second file called *DIARY.DO*. *DIARY* allows me to comment extensively on the previous day's list of things to do. *DIARY* provides a handy record for future reference and reflections. *TIME* sorts by loading *SORT.CO*, running it on *TASK*, then killing *SORT*. *TIME* downloads and then uploads the *TASK* and *DIARY* files from and to the Node Datapac. But not to worry. There is no lag in running the programs this way. It just prevents compatibility conflicts and cold starts.

You can also store another battery pack on the back of the computer.

HURRAH FOR VELCRO

As I mentioned, the addition of the Node and Safe housings makes the 200 a balanced and solid machine in your hands. What really brings out the advantage of these housings is the installation of the A.R.M.S. NiCd battery packs. Using Velcro hook-and-loop strips, you can put one battery pack underneath the computer, lodging it against the bottom of the Node and the bottom of the 200. (I also cover the entire metal housing of the Node with Velcro cloth just to make it smooth and comfortable on the naked knees.) You can also store another battery pack on the back of the computer, using Velcro and some plugs to give the pack extra support. (I keep a Cannon RS-232 plastic plug in one port, a sawed-off phone cable jack in the other.) To the Velcro

```
+1:IFNE=NTHENL=LI:LI=STRING$(255,Ø)
121 PRINT#2,L:GOTO12Ø
122 CLOSE:KILL"TASK.DO":NAME"TP.DO"AS"TA
SK.DO"
123 CLOSE:OPENDFFORINPUTAS1
124 PRINTEQ;:FORX=1TONE:LINEINPUT#1,A:NE
XTX
125 FA=Ø:RR=-1:RS=Ø:RETURN
126 KEYSTOP:PRINT@4Ø,EJ;EU;:PRINT@3ØØ,VI
"Add"VO;:FA=-1:A=DT:FL=FA:PRINT@8Ø,EJ;A;
:GOTO96
127 CLOSE:OPENDFFORAPPENDAS1
128 PRINT#1,LI:CLOSE:FA=Ø
129 GOTO123
139 PRINTEU;:PRINT@315,ET;VI"Exit"VO;:RS
=-1:GOTO141
14Ø PRINTEU;:PRINT@28Ø,ET;VI;LEFT$(L2,4)
VO;:PRINT@8Ø,EJ;:KK=-1
141 RETURN
142 REM
143 RS=-1:RETURN
144 REM
145 RS=-1:RETURN
146 PRINTEU;:PRINT@295,ET;VI"Prev";VO;
147 D%=1:M=M-1:IFM<1THENM=12:YY=YY-1
148 RS=-1:RETURN
149 PRINTEU;:PRINT@3ØØ,ET;VI"Next";VO;
15Ø M=M+1:D%=1:IFM>12THENM=1:YY=YY+1
151 RS=-1:RETURN
152 REM
153 RS=-1:RETURN
154 REM
155 PRINTVO;EQ:CLEAR256,6Ø9Ø1:FX$="SORT.
CO":CALL61162,13,VARPTR(FX$):CALL61162,2
3,VARPTR(FX$)
156 LOADM"SORT":DEFINTJ:A$="TASK"
157 FORA=1TOLEN(A$)
158 POKE61295+A,ASC(MID$(A$,A)):NEXT
159 POKE61295+A,Ø
16Ø CLS:J=Ø:CALLHIMEM+5,Ø,VARPTR(J)
161 CLOSE:CLEAR1ØØØ,HIMEM:MAXFILES=3
162 OPEN"TASK"FORINPUTAS1:OPEN"NEW"FOROU
TPUTAS2:OPEN"DIARY"FORAPPENDAS3
163 IFEOF(1)THEN165ELSELINEINPUT#1,A$
164 IF(LEFT$(A$,2)=LEFT$(DATE$,2)ANDMID$
(A$,4,2)<MID$(DATE$,4,2))OR(LEFT$(A$,2)<
LEFT$(DATE$,2))THENPRINT#3,:PRINT#3,A$:G
OTO163:ELSEPRINT#2,A$:GOTO163
165 CLOSE:KILL"TASK.DO":NAME"NEW.DO"AS "
TASK.DO":KILL"SORT.CO"
166 CLOSE:UT$="TASK.DO":CALL61162,13,VAR
PTR(UT$):CALL61162,24,VARPTR(UT$):KILLUT
$
168 DD$="DIARY.DO":CALL61162,13,VARPTR(D
D$):CALL61162,24,VARPTR(DD$):KILLDD$
17Ø PRINTVO;EQ:CLEAR256,MAXRAM:{MENU
```

End of listing.

```
1 CLEAR256,MAXRAM:READP:CLEAR256,P:READP
,Q,R,A$:C=P+Q+R
2 PRINT"Working..."
3 FORJ=PTOQ:READX:C=C+X:POKEJ,X:NEXT:REA
DZ
4 IFC<>ZTHENSOUND9394,9:PRINT"Checksum i
s wrong":END
5 SAVEMA$,P,Q,R
1Ø DATA6Ø9Ø2,611Ø3,Ø,"sort"
11 DATA46,68,79,Ø,54,1,34,17Ø,238,33,112
,239,229,43,35,2Ø5
12 DATA19,16,119,254,46,2Ø2,2,238,183,19
4,244,237,17,23Ø,237,6
13 DATA4,2Ø5,186,65,2Ø9,62,1Ø,2Ø5,79,11Ø
,2ØØ,2Ø5,14Ø,11Ø,34,172
14 DATA238,42,17Ø,238,54,Ø,175,5Ø,169,23
8,42,172,238,229,2Ø5,126
15 DATA238,34,174,238,225,235,72,42,174,
238,229,2Ø5,126,238,34,174
16 DATA238,225,12Ø,183,2Ø2,76,238,197,21
3,229,2Ø5,113,238,225,2Ø9,193
17 DATA22Ø,84,238,195,43,238,58,169,238,
183,194,28,238,2Ø1,197,229
18 DATA17,112,239,2Ø5,167,5Ø,2Ø9,235,12,
2Ø5,96,6Ø,17,112,239,193
19 DATA4,2Ø5,189,65,65,62,255,5Ø,169,238
,2Ø1,235,26,19Ø,192,19
2Ø DATA5,2ØØ,35,13,194,114,238,2Ø1,6,Ø,1
26,254,26,2ØØ,35,4
21 DATA2Ø2,149,238,254,13,194,128,238,12
6,254,1Ø,192,35,4,192,2Ø5
22 DATA77,79,2Ø9,225,6,1ØØ,126,231,35,5,
194,156,238,42,17Ø,238
23 DATA54,2,2Ø1,Ø,Ø,Ø,Ø,Ø,Ø,Ø,149556
2ØØ CLEAR6ØØ:DEFINTI-Q:DEFSTRX-Z:E=62122
:Y="$$$$$$"+"CO":A=E
27Ø GOSUB4ØØ:IFQTHEN5ØØ
28Ø FORJ=1TO8:K=ASC(MID$(Y,J)):IFK>96THE
NK=K-32
29Ø IFK=36ORK=PEEK(A+J+2)THENNEXT:IFMTHE
NPOKEA,(PEEK(A)AND247)ELSE
POKEA,(PEEK(A)OR8)
3ØØ GOTO27Ø
4ØØ A=A+11:IFA>62628THENQ=1:RETURNELSEIF
PEEK(A)<128THEN4ØØELSEQ=Ø:RETURN:
IFQTHENRETURN
5ØØ Q$=CHR$(34):C$=CHR$(13):A$="NEW"+CHR
$(13)+"kill"+Q$+"sort.ba"+C$+"menu"+C$
5Ø7 FORI=1TOLEN(A$):POKE2*I+64797,ASC(MI
D$(A$,I)):POKE2*I+64798,Ø:NEXT
5Ø8 FORI=1TOLEN(A$):POKE2*I+64797,ASC(MI
D$(A$,I)):POKE2*I+64798,Ø:NEXT
5Ø9 BEEP:POKE64798,I-1
```

End of listing.

Listing 2. BASIC *program* SORT.BA, *which loads* SORT.CO, *a rapid machine-language sorter. With* TIME.BA, SORT *illustrates the way* .CO *files should be handled with the Node Datapac installed.*

underneath the 200, you can attach other useful stuff, like a felt-tip pen, red marker, and a yellow underliner. You can then edit printouts, and the writing machine becomes self-contained.

Loaded with two solid battery packs, the 200 is on the go for twenty-two hours straight, and with an extra third pack around, you can rotate them as they get recharged (takes eight hours for one to recharge while you use the others). This way, you're never out of power and never need to fumble with batteries. The added weight is negligible. The 200 consumes little power compared to energy-guzzlers with their back-lit displays and external disk drives. The Node and Safe have their own internal 5-year, watch-size batteries.

I keep a Duracell "Flip" pocket light, also fastened with Velcro, underneath the 200. It's handy for computing in the dark and improves LCD legibility wherever the light is not good. The flip light works great if you stand it up with a sliver of Velcro next

```
1 CLEAR256,HIMEM:PRINT:PRINT"axtsd;";:F$
=INPUT$(1)
2 IFF$=CHR$(13)THENMENU
4 IFF$=";"THENINPUT"Load";N$:GOTO18
6 IFF$="a"THENX=1:GOTO22
8 IFF$="x"THENX=Ø:GOTO22
1Ø IFF$="t"THENU$="TMPC.BA":GOTO2Ø
12 IFF$="s"THENU$="STORE.BA":GOTO2Ø
16 IFF$="d"THENCLEARØ,53853:N$="DSKMGR.C
O":GOTO18
18 CALL61162,13,VARPTR(N$):CALL61162,23,
VARPTR(N$):RUN
2Ø CALL61162,22,VARPTR(U$)
22 CALL397Ø3:POKE6356Ø,Ø:FORA=634Ø8TO634
Ø8+33:READB:POKEA,B:NEXTA:CALL634Ø8,Ø,X*
256
24 DATA243,219,216,23Ø,12,246,2,211,216,
126,126,126,44,126,33,Ø,Ø,126,167,62,2,1
94,Ø,Ø,219,216,23Ø,12,211,216,2Ø5,69,79,
199
```

End of listing.

The options of *MENU.BA* are as follows:

a= access Node
x= access Super ROM
t= run the *TIME* program
s= run the *STORE* program
semicolon= prompt for a filename to be loaded from the Node to main RAM
d= load *DSKMGR.CO* from Node for operating the TTD.

Listing 3. Program MENU.BA, *which stays in main RAM of the Tandy 200 and operates as a shuttle for up and downloading files from the Node Datapac. It also switches between Node and Super ROM.*

to the *TAB* and *CTRL* keys on the left side of the 200. This is the 200's low-cost answer to the backlit, supertwist LCD screens. And it doesn't drain the computer's battery power. O mother of invention!

RUNNING THE RAM DISK

You can also streamline file shuttling between the Node and RAM. I've made a little program to do most of the operations from main RAM. It's called—ta-da!—*MENU.BA* (see Listing 3). With it, you can do most operations with a single key, from switching between Super and Node access, to loading *DSKMGR.CO*, the public-domain Tandy Disk Drive manager. After using Super ROM, you have to remember to go through *MENU.BA* first before trying to access Node. All you do is put the cursor over *MENU*, press *RETURN*, and press *a*. You're back in Node and can run from there.

Writing and editing from the Node menu itself has extra features. It gives you an overwrite/insert option as well as word count and search-and-replace. Super gives you mapping before printing and hundreds of other features. If your printer needs a linefeed, you can get this feature from Super ROM's *WRITE*.

Storing files to Node can also be completely automated, as I've done with the listing *STORE.BA* (see Listing 4). Just put the cursor over the program *STORE* in the Node and every *.DO*, *.CA*, and *.CT* file is saved (the last two extensions are for files created by Super). It's important to remember that you cannot edit files from Node without a corresponding amount of bytes available in main RAM. If you don't have enough room in RAM, Node returns you to its own menu. When moving files from the IBM to the 200, I use the IBMSIG (CompuServe) public-domain program *CHOP* and give it parameters to put my large file into 10-15K chunks. This is the only minor price to pay for the major

```
1 CLS:ONERRORGOTO3Ø:PRINT@56Ø,"Storing..
.":PRINT:FORA=62Ø34TO62474STEP11:F$(N)="
":FORJ=1TO8
3 IFCHR$(PEEK(A+J+2))<>" "THENF$(N)=F$(N
)+CHR$(PEEK(A+J+2))
8 IFJ=6THENF$(N)=F$(N)+"."
9 NEXTJ
1Ø IFPEEK(A)=192ORPEEK(A)=16ØTHEN15ELSEN
EXT
15 IFRIGHT$(F$(N),2)="DO"ORRIGHT$(F$(N),
2)="CT"ORRIGHT$(F$(N),2)="CA"THENPRINTF$
(N):CALL61162,13,VARPTR(F$(N)):CALL61162
,24,VARPTR(F$(N))
16 'If you want files in main RAM to be
killed automatically after storing, just
 add ":KILL (F$(N))" to t end of line 15
2Ø NEXT
3Ø CLEAR256,HIMEM:{MENU
```

End of listing.

Listing 4. STORE.BA *stores all application files from main RAM into the Node Datapac.*

conveniences of the 200. A great file transfer program between the 200 and the IBM was written by Phil Wheeler and you can find it under the name *FT.COM* on the M100 Forum on CompuServe.

Once it's set up properly and unleashed, forget about Toshiba and NEC. Once tamed, the 200 is a portable powerhouse, a writer's dream.

Michael Heim has a doctorate in philosophy and is the author of Electric Language: A Philosophical Study of Word Processing *(Yale University Press, 1987). His articles on the impact of computer software have appeared nationally.*

Editor's note: We were unable to test these programs. -MN

Vendors Mentioned:

A.R.M.S.
5845 Live Oak Parkway
Suite C
Norcross, GA 30093
(804)794-6675

PCSG
11035 Harry Hines Blvd., #206
Dallas, Texas 75229
(214)351-0564

PG Design
37560 31 Mile High Road
Richmond, Michigan 48062
(313)727-2744

Node Systems, Inc.
1300 East Main Street
Grass Valley, California 95945

A Watchdog for Your NiCd's

Battery Watch *gauges battery discharge—and more.*

by Stephen R. Lankton

Tandy 1400LT owners (and other MS-DOS laptoppers who use NiCd power) ought to consider buying this new product from Traveling Software (TS). *Battery Watch* is RAM-resident software that monitors the use of the CPU and peripherals and alerts you if you have a low battery, before it gets dangerously low. It automatically sounds an alarm at a user-determined time; plus it offers an ever-ready visual display of the battery's charge at the press of a hot key. What's more, it allows for a total discharge of the battery before you recharge it. As I see it, any of these services merits the use of *Battery Watch*.

WHY *BATTERY WATCH*?

If you have a Tandy 1400LT, you already have a low battery warning light (labeled *LOW BAT*) telling you when you should recharge. Why do you need another product to do the same thing? For one, the low battery light presents an all-or-nothing decision. But with *Battery Watch* (*BW*) you can know, before you travel, the status of the battery charge. In other words, if you have used the battery for 2 hours or so, *BW* lets you know that you have, say, 1.4 hours of charge remaining.

Also, if you don't discharge your NiCd batteries fully before recharging, you will severely diminish their lives and forever reduce the use/recharge cycle while the batteries are living. In the past, since I'd rather be safe than sorry when I travel, I have erred in the direction of frequent recharges. Over the years, this habit has cost me two replacement batteries in my VCR and one in my Chipmunk portable drive. Part of my motivation for buying *BW* was the memory of how I goofed up those previous batteries.

The rest was the sad realization that when the *LOW BAT* light came on while I was using my new hard drive, it was too late to save the data I was working on. I had to save it *before* the low battery triggered the LED, or my battery would be too low to save a document properly.

DOES IT DO THE JOB?

So the question became, "Does *Battery Watch* do the job it is advertised to do?" I had to find out.

The *BW* manual lists supported computers as follows: Amstrad 512, 640; Datavue Spark, Epson LCD, backlit, and HD; GRiDLite Plus; IBM Convertible; NEC MultiSpeed, EL, and HD; Sharp 4501, 4502, 4521; Tandy 1400LT; Toshiba T1000, 1100+, T1200F, H, and backlit; Zenith 181, 183, SupersPort and SupersPort 286.

Absent from the list is a version for the Tandy 1400LT *with hard drive*. Many people, like me, have ordered and installed the drive via third party sources. Being unfamiliar with *BW*, I ordered it, not realizing that I needed a special version—one not yet written. Afterwards, frequent calls to TS resulted in false hopes about its becoming available, partly because Tandy had not released its hard drive unit yet.

BW comes in a colorful red-white-blue package with a 3.5-inch floppy (with multicolored label) and a 26-page manual on installation and use. That is, it looks first rate and has the feel of a well-made product of which the manufacturer must be proud.

INSTALLATION

A look at the *BW* disk directory reveals that installation uses two programs totaling about 27K, and the subdirectory *INST* contains 26 versions of the *BW* program at roughly 17.5K each. *INSTALL.EXE*, the installation program, selects one of these versions for you, places it on your floppy disk, and inserts a call for it into your *AUTOEXEC.BAT* file if you want the program to run on boot-up. After making a copy of the *BW* disk (the original could get damaged), you type *A:install* (or *B:install* in a 2-floppy system). Answer a prompt for the directory or path name where you want *BW* installed (in my case, *C:* for the hard drive), and another for whether you want *BW* called from your *AUTOEXEC.BAT* file. Finally, select your computer type from a window listing the supported computers, and it promptly copies *BW* to the designated drive, completing the installation.

USING *BATTERY WATCH*

Typing *BW* loads it into memory (as does rebooting, if you opted to have *AUTOEXEC.BAT* modified), where it takes up about 10-12K of RAM. The command *BW UN* unloads it from memory should you desire.

At any time, pressing the hot key *SHIFT-ALT-B* brings up the main *BW* window, which displays the battery level on a horizontal bar graph (like a gasoline gauge might display your automobile fuel level) and a digital readout of how many hours and minutes remain. If you have just charged the battery, you can reset the gauge to *FULL*. From this screen you can exit (*ESC*), get help (*F1*), and reach the utilities (*F3*).

The utilities consist of three options: *Deep Discharge* (*F4*), *Status* (*F5*), and *Battery Set* (*F6*).

Deep Discharge helps prolong NiCd battery life. The so-called "memory" on all NiCd's dictates that you fully discharge

it before recharging. This can be a bit of a hassle, especially with the Tandy laptop, since it goes into "standby" mode—nearly turning itself off—to reduce discharge when left running. This is where *Deep Discharge* comes to the rescue. Initiate this feature, and *BW* fully drains the battery to the lowest appropriate level and terminates by shutting the machine off. This is best done overnight. Following that, you merely recharge the battery as described in your user manual. A purchaser may be well advised to do three charge/deep discharge cycles in rapid succession to ensure the rejuvenation of a battery that has learned to give less than it should.

Status reveals more technical data on the percentage of use for each component connected to the machine. To understand this, users need to know that *BW* actually monitors access to each of the hardware addresses for each component installed. So if the hard drive controller board uses 0.62W (watts) when the drive is idle and 1.25W when accessed, and the hard drive itself uses 4.6W when it reads or writes and 4.58W when idle (as the CMS hard drive does), then *BW* subtracts these amounts during the times when the drive is used. On the other hand, when the drive controller is idle, the 0.62W power consumption must be subtracted continually when the machine is on. Conversely, the modem and the floppy disks drain power only when they are accessed and used. So *BW* stays RAM-resident and "listens" for calls to the addresses used to access components, and then it subtracts exactly the right power consumption, depending on the exact use of the machine. For your information, the *Status* window tells you what percentage of use and power went to each component installed.

Finally, the *Battery Set* window lets you make minuscule adjustments in your battery power gauge reading, according to your personal estimate of battery power level after using the power adapter. Owners of the IBM, NEC HD, Sharp, and Zenith 286 laptops do not have to estimate, since *BW* gauges the charge gained when you use their adapters.

Command line "switches" let you customize *BW* when you run or boot it. You may use special settings for loading *BW* with hardware options. Users need type only *BW* for most applications, but anyone who has a non-factory modem or an enhanced (or aged) computer needs to adjust the program. To adjust it, find the specs for the product you have added (say, a modem) and then type *BW MO=94* (94 milliamperes is the power consumption for the Holmes d-2400 modem on the Datavue laptop, according to a chart for some products, included in the *BW* manual).

Tandy 1400LT hard drive users will find that *BW*, at this point, does not support them. Yet you can get by until a version is made for us. Use the *SY=* switch and estimate your percent of read/writes to the hard disk in the "system" information switch. I use an estimate of 533 milliamps, so I type *BW SY=533 AL=10*. You can re-estimate this 533-milliamp figure over a period of days until you find the right one. After that, *BW* will be much handier. But without that customization, *BW* makes a poor estimate, and you might as well keep track of how long you have been working and estimate mentally.

You can set the alarm to go off at any pre-drain time with the *AL=* switch. In the above example, notice my setting of 10 minutes.

You can change the *SHIFT-ALT-B* hot key combination that calls the *BW* window to any other key combination.

There are other software switches available for floppy drives, back lights, and more. But again, most users should not have to bother with these choices.

BW 1, BUGS 0

So far, no bugs have popped up. I keep *CED*, a public-domain line editor, resident in RAM, which interferes with nothing on my desktop or laptop, and *BW* seems to interact well. The current version has caused no problems with *Word 3.1*, *WordPerfect 4.2*, *Lotus 2.0*, *Quattro*, *Reflex*, *Telecommuter*, *TapCIS*, or any other program I have tried it with.

However, the *BW* window will not come up when *Windows 2.03* is operating. TS customer support says that they didn't know that but will look into it.

The manual is very complete and, since the product works as advertised, a review of *BW* is like *Cliff's Notes* for the manual.

Traveling Software has long been a reliable company with leading products for portable computers. I have dealt with them for four or five years and found that, unlike others, TS releases software and hardware only after it has been tested at beta test locations. They offer telephone support, product refunds, and courteous service.

TS hopes to have a version for the Tandy hard drive some day. Until then, *BW* is useful for all the computers it supports, including the Tandy 1400LT with hard drive with the customization stated above. In all cases, the *Deep Discharge* feature alone almost justifies the $40 price tag.

Stephen Lankton, assistant professor at the University of West Florida, is an author of eleven professional books in psychology.

Editor's note: When the BW *alarm goes off while you're running* Word *version 3.0 in the graphics mode (the default, without the /c option), the screen appears scrambled behind the* BW *window. But after you press* ESC *to remove the* BW *window, pressing* ESC *again restores the* Word *screen.*

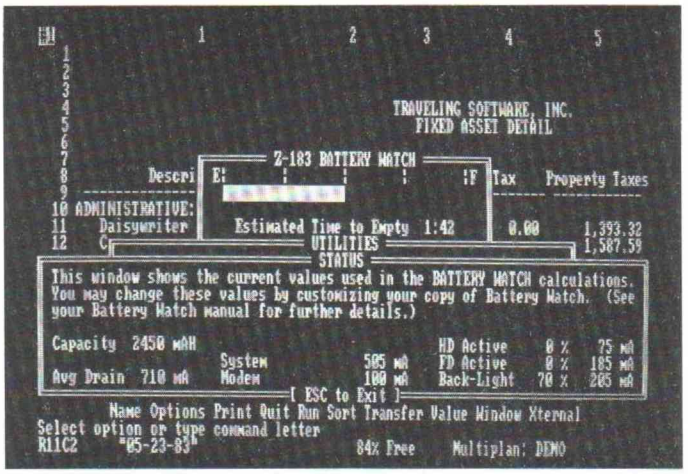


Photo 1. Battery Watch *Status screen, showing the constants used in the program's power calculations so it can tell you how much time you have left on your computer's battery.*

MANUFACTURER'S SPECIFICATIONS

Battery Watch version 1.0F–$39.95

System tested on:
Tandy 1400LT, with 20M CMS hard drive
and 1200-baud modem

Traveling Software
19310 North Creek Parkway
Bothell, WA 98011
(800)343-8080
(206)483-8088

Calling *TEXT* from *BASIC*

Here's how to make it a round trip.

by Mo Budlong

One of the great advantages of the Model 100/102 over other computers is its integration. *TEXT* and *BASIC* can load or save using the modem or RS-232 line. *TELCOM* can use the address file of *ADDRSS* to locate phone numbers and dial them. The *ADDRSS* program uses the "Find" function of the *TEXT* program to locate addresses.

However, one area of "missing" integration is between *BASIC* and *TEXT*. Why not be able to drop into *TEXT* from a *BASIC* program, edit a file, and then return to *BASIC*?

TEXT is not very friendly to programmers. It does things to the stack, destroying all record of where you were so that you can't get back, and if approached from the wrong entry point it always jumps to the Model 100/102 menu on exit.

You can get into *TEXT* from *BASIC* by *CALL*ing 24046, the entry address to the *TEXT* program, but you will not return to your *BASIC* program. This entry point always causes an exit to the main menu when you're done editing. To get into *TEXT* and back to *BASIC* you have to find another door into the *TEXT* program.

To get into *TEXT* and back to *BASIC* you have to find another door into *TEXT*.

Listing 1 is a few lines from the initialization code of *TEXT* at address 5F65H. After *TEXT* decides the name of the file to be edited, it jumps to the code of Listing 1. On entry, *HL* contains the address of the first character in the file. The last line of Listing 1 at 5F74H saves the value 5797H at the address F765H. It becomes apparent later in the logic for *TEXT* that when you press *F8* to exit from *TEXT*, the program recovers the address saved at F765H and jumps to it. Since 5797H is the address of *MENU*, of course, *TEXT* always returns to the menu on exit. So the trick is to load *HL* with the address that you want to return to, and then jump into *TEXT* at 5F71H.

You have three other problems to resolve before you can proceed. Two are fairly simple. To enter *TEXT* at 5F71H, the *A* register must contain the value 1 because you have skipped that instruction at 5F6CH. Also, the address of the first character of the text file to edit must be on the stack to stand in for the instruction at 5F65H, which pushes *HL* containing that address.

The third problem is shown in Listing 2. This routine is

```
;-----------------------------------------------------------

;Code that destroys the stack executed by TEXT.
;This code is part of a routine at 5D53H that is called by
     TEXT after every key stroke is executed.

;-----------------------------------------------------------

5D5D  POP   B       ;RETurn to TEXT into B
5D5E  LHLD  FB9DH   ;Load Top of stack to HL
5D61  SPHL          ;Set Stack pointer to top of stack
5D62  PUSH  B       ;Restore RETurn to TEXT
5D63  RET           ;And back to TEXT
```

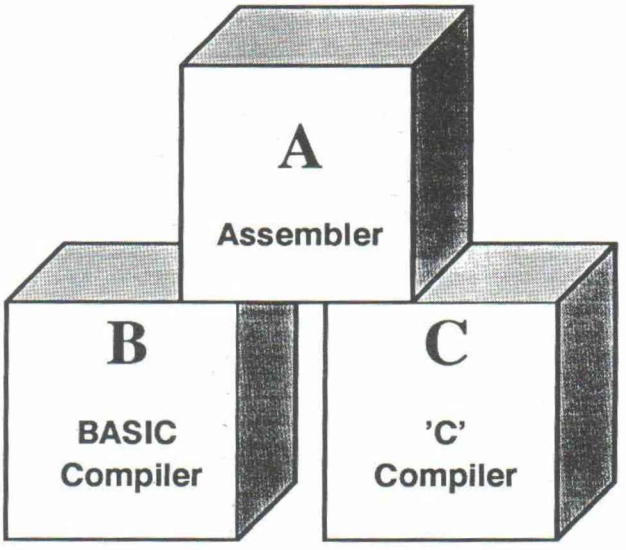
Listing 2. The TEXT *code that routinely gets rid of addresses telling where you want it to go on exit. The author shows how to get around this problem also.*

```
;-----------------------------------------------------------
;Commented Portion of the Initialization code for TEXT.
     This code is executed after the Code at 24046
     (5DEEH) has decided the name of the file to be
     edited either because the cursor was positioned over
     the file name, or the user typed in something in
     response to the "File to Edit ?" prompt.  On entry to
     this piece of code the HL register points to the first
     character of the file to be edited.
;-----------------------------------------------------------

5F65  PUSH  H       ;Save start of the file to edit
5F66  LXI   H,0     ;Set offset from file start at 0
5F69  SHLD  F6E7H   ;Save the offset
5F6C  MVI   A,1     ;1 for TEXT, 0 for EDITing
                    BASIC file.
5F6E  LXI   H,5797H ;Address of MENU routine
5F71  STA   F921H   ;Save TEXT or EDIT type
5F74  SHLD  F765H   ;Save MENU Address for exit.
                    ;When F8 is pressed (or ESC
                    ESC) TEXT
                    ;jumps to the address saved at
                    F765H.
```

Listing 1. A few lines from the initialization code of TEXT. *Here* TEXT *is configured to go to the Model 100's main menu on exit. But to go back to* BASIC, *author Budlong shows how to skip this, telling* TEXT *to go back to* BASIC.

OPTION ROM DEVELOPMENT FOR THE MODEL 100/102 IS AS EASY AS . . .



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*CALL*ed after every keystroke while *TEXT* is running. The stack pointer is reinitialized to the value stored at FB9DH. This value is a pointer to the top of the stack, so the routine is a quick way to clean up any litter left on the stack. The problem is that some of the litter that *TEXT* cleans up includes your route home. Any return addresses placed on the stack, including the next line to execute in *BASIC*, are swept away here. The way around this problem is to put a dummy value into FB9DH temporarily to protect your return addresses.

With this knowledge, it is possible to attack these three problems. The approach I have used is to ensure that the text file exists by opening it in *APPEND* mode in *BASIC*. If a file does not exist, *APPEND* mode will create it. If the file does exist, *APPEND* mode does nothing and leaves the file unchanged. The file is then closed, and the routine is called, passing in a *VARPTR* to the file name.

Listing 3 provides an example of the calling sequence when the *TXTCAL* routine has been set up in memory at 62750.

Listing 4 is the assembly language code for *TXTCAL.ASM*. It has only one line of code that is position dependent and can otherwise be loaded and run at any address. Since the only position-dependent data is the address of the exit of the routine, it is easy to code a loader within a *BASIC* program that will place this routine anywhere you want it. More about the loader in just a moment.

The entry to *TXTCAL* is executed as in line 170 of Listing 3 by passing a *VARPTR*, a pointer to the file name, to the routine in the *HL* register.

The whole routine is 66 bytes long.

An entry in the variable table for a string has this layout.

Byte 1	Value 3 for a string.
Bytes 2 and 3	Variable name *FN*.
Byte 4	Length of the string.
Bytes 5 and 6	Address of the string.

When a *VARPTR* function is performed on a string variable, it returns the address of Byte 4, the length byte. This example would print the value 5, the length of the string *X$*.

```
10 X$="HELLO"
20 A=VARPTR(X$)
30 PRINT PEEK(A)
```

In Listing 4, the first action is to save all registers. The length of the file name and the pointer to the file name are extracted from the variable table. Two Model 100/102 routines are used to locate the directory entry for the file. If it cannot find the file, *TXTCAL* exits; otherwise it uses the directory entry to establish the beginning address of the file. This solves one of the three problems, since you now have the start of the file.

Beginning at *SAVESTACK* in Listing 4 is a mixture of the logic that imitates what the Model 100/102 does in Listing 1 and the logic that handles the special setup needed to enter *TEXT*.

Here are the steps:

- Save the value stored at FB9DH by pushing it on the stack.

```
100 REM **** CLEAR HIMEM AND LOAD THE RO
UTINE
110 CLEAR 100,62750
120 GOSUB 300
130 REM SAMPLE BASIC CALL TO THE EDITOR
140 FN$="HELLO.DO"
150 OPEN FN$ FOR APPEND AS 1
160 CLOSE 1
170 CALL TX,,VARPTR(FN$)
180 PRINT "BACK IN BASIC HERE"
190 END
300 REM **** SET TX AS ENTRY ADDRESS
310 REM **** LOAD ROUTINE AT TX FOR 78 B
YTES
320 TX = 62750 'TX MUST BE >= HIMEM
330 FOR A = TX TO TX+65
340 READ N:POKE A,N:NEXT A
350 REM D=INT((TX+48)/256):C=(TX+47)-(25
6*D):POKE TX+42,C: POKE TX+43,D
360 RETURN
370 DATA 229,213,197,245,126, 35, 94, 35
, 86,235
380 DATA  95,205, 11, 76,205,175, 32,202
,237, 20
390 DATA  35, 94, 35, 86, 42,157,251,229
, 33,  0
400 DATA   0, 34,231,246, 57, 34,157,251
,213, 62
410 DATA   1, 33, 77,245,195,113, 95,225
,225, 34
420 DATA 157,251,205,156,108,175, 50, 80
,246, 61
430 DATA  50,173,250,195,237, 20
```

Listing 3. A sample BASIC *program that shows how you would call the machine-language program that lets you return to* BASIC *after using* TEXT.

- Set to zero the value of the offset into the file to be edited.
- Get the current value of the stack pointer and save it at FB9DH.
- Place *1* in the *A* register.
- Push the address of the start of the file onto the stack.
- Load *HL* with an address to be used as the return when an exit is taken from *TEXT*.

The routine then jumps into *TEXT*, and on exit returns to the routine marked *EXIT:* in the listing.

The *EXIT* routine takes care of some housekeeping by clearing an extra *PUSH* left on the stack by *TEXT*, restoring the original value to FB9DH, restoring the *BASIC* function key table, and re-enabling standard function-key handling. The routine jumps to an exit in the main system that *POP*s all registers in reverse of the order they were *PUSH*ed and returns to the next line of *BASIC*.

The whole routine is 66 bytes long. The version I have provided is set up to run at address 62750. Only the address of *EXIT* is position dependent.

Listing 5 is a *BASIC* listing that loads the routine and then calls it to edit a file. After all the data values are read and poked, the extra line of code at line 350 takes care of the one changeable address. The variable *TX* is set to the point that you want to use for entry into the routine. If you want it somewhere else, change the value on line 320. The routine is small enough that *TX* could be set as high as 62890 without causing trouble.

```
;-----------------------------------------
;TXTCAL.ASM
;
;A routine to allow the Model 100/102 TEXT editor to be
    called from within BASIC. The routine RETurns to
    BASIC when the user exits from TEXT.
;See article for description of how to use it.

;-----------------------------------------


;Model 100/102 routines in this code are
POPALL: EQU  014EDH  ;POPs all registers and does a
                       RETurn
PRSNAM: EQU 04C0BH   ;Parses a file name "FILE.DO"
                       pointed to by HL into FC93H
                       system file name area. On entry,
                       the length of the file name must
                       be in register E.
FNDFIL: EQU  020AFH  ;Search directory for file named at
                       FC93H on exit HL points to
                       directory or Z is set if file not
                       found.
BK2SK: EQU   06C9CH  ;Copies the BASIC function key
                       table to the system function key
                       table. Used to restore BASIC
                       table on exit.
TXTENT: EQU  05F71H  ;An entry into the TEXT editor in
                       the middle of the INIT routines.

;Model 100/102 addresses in this code are
FILOFF: EQU  0F6E7H  ;Offset from the beginning of the
                       TEXT file currently being EDITed
                       so that the editor screen routine
                       knows where to position itself.
STKTOP: EQU  0FB9DH  ;Holds the beginning address of
                       the stack. TEXT clears the stack
                       by setting it to the value held in
                       FB9DH. To preserve the stack
                       this must be saved and a new
                       dummy value inserted.
FKCTRL: EQU  0F650H  ;Holds 0 or 80H. When set to 0, F1-
                       F8 return the string associated
                       with that key in the system key
                       table. When set to 80 (which the
                       editor INIT code does) F1-F8 skip
                       the first 4 characters of the string
                       in the table and return whatever
                       is left. Must be reset to 0 on exit
                       from the editor.
LBENBL: EQU  0FAADH  ;Set to FFH to enable the label line.
                       Must be enabled on exit.

        ORG   62750
START:  PUSH  H      ;Save all registers on entry
        PUSH  D      ;in opposite order to POPALL
        PUSH  B      ;routine
        PUSH  PSW
        MOV   A,M    ;H points to string length in VAR
                       table
        INX   H      ;Move up to pointer to string
        MOV   E,M    ;Grab pointer to string into
        INX   H      ;DE
        MOV   D,M
        XCHG         ;Pointer to string into HL
        MOV   E,A    ;Length into E
        CALL  PRSNAM ;Filename into FC93H
        CALL  FNDFIL ;Locate directory entry for file at
                       FC93H
        JZ    POPALL ;Quit if not found
        INX   H      ;Move to pointer to file start
        MOV   E,M    ;Start of file into DE
        INX   H
        MOV   D,M
SAVESTACK:
        LHLD  STKTOP ;Save the stack top
        PUSH  H      ;On the stack
        LXI   H,0    ;Offset to start of
        SHLD  FILOFF ;file to EDIT is saved here
NEWSTACK:
        DAD   SP     ;Get stack pointer
        SHLD  STKTOP ;Save it at stack top pointer
        PUSH  D      ;File start on stack for TEXT
        MVI   A,1    ;A=1 standard EDIT, A=0 BASIC
                       EDIT
SETEXIT:
        LXI   H,EXIT ;Return from the editor
        JMP   TXTENT ;Jump to the editor
EXIT:   POP   H      ;Extra PUSH left by the editor
        POP   H      ;Restore editor stack
        SHLD  STKTOP
        CALL  BK2SK  ;Copy BASIC F-key table to SYS
                       table
        XRA   A      ;Turn off special F-key handling
        STA   FKCTRL ;Special F-key byte
        DCR   A      ;Enable label keys with FFH
        STA   LBENBL ;Label line enable byte
        JMP   POPALL ;And exit
        END
```

Listing 4. Assembly language program TXTCAL.ASM. *The program that returns you to* BASIC *from* TEXT, *instead of to the main menu.*

Editor's note: You don't need an assembler to use the techniques described--Listing 5's DATA *statements contain the assembled code.*

But if you care to experiment with the assembly language routines, note that some assemblers disallow long label names. Either shorten the SAVESTACK, NEWSTACK, *and* SETEXIT *labels, or omit them entirely, since they are strictly informational and not referenced elsewhere in the listing.*

HSI and Custom Software assemblers require further modifications (see DEFUSR, *p. 27).*

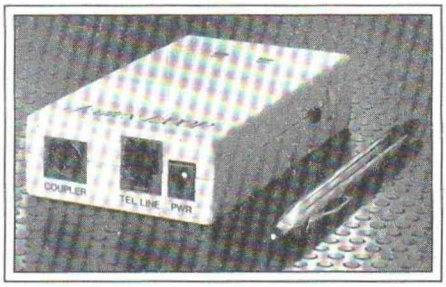
-MN

```
10Ø REM *** SAMPLE CALLING SEQUENCE
11Ø REM *** FOR ACCESSING TXTCAL ROUTINE
12Ø REM *** OPEN APPEND IS USED TO ENSUR
E THAT
13Ø REM *** FILE EXISTS BEFORE TEXT IS C
ALLED
14Ø FN$="HELLO.DO"
15Ø OPEN FN$ FOR APPEND AS 1
16Ø CLOSE 1
17Ø CALL 6275Ø,,VARPTR(FN$)
18Ø PRINT "BACK IN BASIC HERE"
```

Listing 5. A BASIC *program that loads the routine shown in Listing 4 and calls it to edit a file.*

Three New Products from Avatex

A pocket modem, a personal copier/FAX, and new communications software have been released by Avatex. The Avatex 1200P, a portable modem with a two-year warranty, is fully Hayes compatible and comes with its own battery charger. It offers speeds of up to 1200 bps, auto-originate and answer modes, pulse or tone dialing selection, and a 40-character dialing buffer. It plugs directly into the RS-232C port. The Avatex 1200P includes an RJ11 (modular jack) interface, LED indicators for modem ready and carrier detect, and diagnostics. An optional acoustic coupler is available for non-modular telephones.



The Avatex 1200P *pocket modem is one of three new products available from Avatex.*

AvaTalk is the new communications software that will be included with each Avatex modem. This easy-to-use, menu-driven package for IBM compatibles offers transmission at up to 9600 baud, which allows selection of COM1 through COM4 serial ports. Eighteen autodial numbers may be stored in the directory, and users may specify options of speed, parity, etc. from the main menu. *AvaTalk* is supplied on a 5.25-inch floppy disk and requires 192K RAM and MS-DOS 2.1 or higher.

The EFAX-88 sends and receives high quality facsimiles, or produces personal copies. Weighing under ten pounds, it can be configured for both 110 and 220 volts, and can be adjusted for transmitting or receiving. The EFAX-88 may be operated in either automatic or manual mode, at speeds of 2400, 4800, 7200 and 9600 bps.

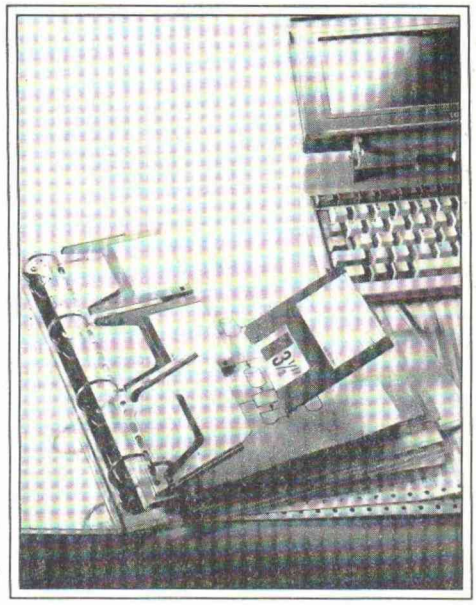
The 1200P pocket modem is priced in single quantities at $149.00. *AvaTalk* is included at no charge with each Avatex modem, but is also available separately for $25.00. The EFAX-88 is priced at $1,149.00 in single quantities. For further information, contact Avatex, 1230 Oakmead Parkway, Suite 310, Sunnyvale, CA 94086 (408)732-1181. *Or circle #68 on your Reader Service Card.*

Disc-Clip Stores Disks in a Regular Binder

The *ELBA Disc-Clip* may be used to store 3.5-inch diskettes safely and securely in 2- or 3-ring binders. Made of tough polystyrene material for secure grip, the ELBA Disc-Clips can snap together in a row for convenient filing on standard loose-leaf binder rings. The diskettes slip in and out of the clips with ease, yet stay safely in place, filed securely with software documentation in manuals or with printouts in the binder.

Available in retail sets of three, large quantities of the ELBA Disc-Clip can be custom imprinted for sales or promotional purposes. Company logo, re-order information, telephone numbers, and addresses are all options for imprinting.

For further information, contact ICOP, Inc., 318 East Howard Avenue, Decatur, GA 30033 (404)373-3683. *Or circle #63 on your Reader Service card.*



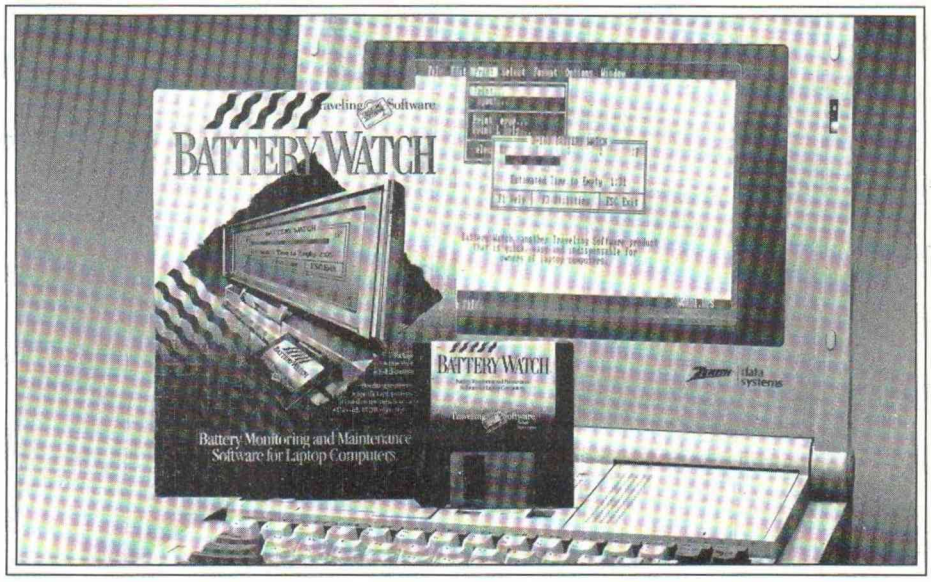
The Disc-Clip *allows 3.5-inch disks to be stored in an ordinary three-ring binder.*

Battery Monitor Program from Traveling Software

Traveling Software, Inc. has released *Battery Watch*, a software program that provides battery monitoring and maintenance for laptop computers. *Battery Watch* indicates precisely how much battery life remains in a portable computer and also provides a "deep discharge" function that allows nickel-cadmium (NiCd) batteries to maintain their maximum charge capacities.

Battery Watch uses an indicator that looks like an automobile gas gauge to tell users exactly how much power is left in their batteries. In addition, the product estimates the time remaining on the battery, based on actual power consumption. This estimate, given in hours and minutes, is updated every two seconds. Depending on the model of laptop computer, *Battery Watch* requires 14K to 18K memory, and operates continuously in the background.

Battery Watch has been specifically developed for the following models: Datavue Spark; Epson Equity LT; IBM Convertible; NEC Multispeed; Sharp 4501, 4502, 4521; Tandy 1400; Toshiba T1000, T1100, T1200; Zenith 181, 183. Retail price is $39.95. For further information, contact Traveling Software, Inc., North Creek Corporate Center, 18702 North Creek Parkway, Bothell, WA 98011 (206)483-8088 or (800) 343-8080. *Or circle #72 on your Reader Service Card.*



Battery Watch *monitors your NiCd's continuously.*

DEFUSR appears monthly to answer your questions about Tandy notebook computers.

Send your queries to: DEFUSR, PORTABLE 100, P.O. Box 428, Peterborough, NH 03458-0428. Please enclose a stamped, self-addressed envelope for our reply.

DIM VIEW/BRIGHT FUTURE

I find the LCD screen on my Tandy 200 to be very tiring on my eyes. I would like to find a backlit monitor that is small enough to pack in an attache case. Do you know of such a thing?

T.J. Chapman
Austin, TX

Yes, indeed. It even fits inside your Tandy 200. Axonix Corporation's ThinE/L system adds electroluminescent backlighting to your existing LCD screen. Installation is done at their factory, and you have your computer back in one week. ThinE/L is available for most notebook computers, including the Tandy 600. Prices range from about $200 to $350, depending on computer model. You can reach them at 2257 S. 1100 E., Salt Lake City, UT 84106. Telephone (801)466-9797. We plan to review ThinE/L in the future.

-MN

¿SE HABLA ESPAÑOL?

Does a program exist for the Model 100 that would translate English words to Spanish words and vice versa? There are large numbers of Spanish and English in this country that have difficulty in translating. If this could be done on a portable, it would be most handy to many individuals and businesses.

Jim Lambert
Dallas, TX

Anybody know of something? Anybody want to write something?

-MN

TYPEZ-VOUS FRANÇAIS?

I am a fairly new user of the Model 100. I find it really interesting to use a portable computer, but since I use my computer word processor in French almost all the time, I was wondering if there is a program that I can buy or that you have mentioned in a past issue of your magazine that can transform the Model 100 keyboard into a French-Canadian keyboard with the *é*, the *à*, etc., instead of using the *CODE* key, which slows down my work by almost 50 percent. Thank you for your cooperation.

Pierre Labelle
St. Bruno, Quebec

The Covington Group used to advertise a program called KEYER, *which let you re-map the keyboard. It had some limitations but was small and inexpensive ($19.95). It could be your solution. I've checked, and they're still in business. You can reach them at 4519 Perry Ave. N., Minneapolis, MN 55422. Telephone (612)537-4910.*

-MN

I have a Tandy 200, so I cannot use the assembler for the M100/102 from Tandy.

MISASSEMBLER?

Is it possible to obtain a copy of your assembler? The one I have is from Hardware Software Integrations (formerly from Custom Software) and it does not seem to like the source listings you have been including in your magazine or on your diskettes. I have a Tandy 200, so I cannot use the assembler for the Model 100/102 from Tandy (Radio Shack). Again, thank you for time and patience with me.

Bob Richey
Santa Clara, CA

It's not our assembler, Bob. Listings come from the authors' own assemblers. I believe Paul Globman and Mo Budlong use Polar Engineering's ROM2 *(distributed by Traveling Software), which uses a different format from yours. By making a few changes to the listings, your HSI assembler will handle them just fine.*

Change hex numbers (ending with H*) to HSI's leading* $ *format (e.g., from* F2A3H *to* $F2A3*). Remove colons from label names, and shorten long ones to HSI's six-character limit. For example,* LONGLABEL: *becomes* LONGLA, *or something similar. Be sure to change all occurrences of a given label to the same thing!*

Some assemblers allow spaces as field separators; change them to TAB's. *Some ignore blank lines; for HSI, start a blank line with a semicolon.*

Where multiple values are defined with one opcode, break them into separate lines. For example:

```
DB 21H,'g',0
DW FFFFH,103,0
```

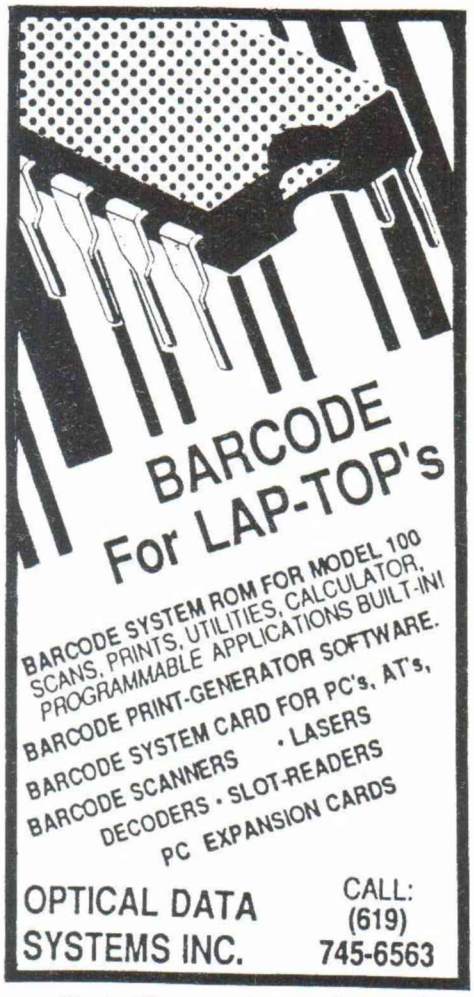
becomes:

```
DB   21H
DB   'g'
DB   0
DW   FFFFH
DW   103
DW   0
```

Some assemblers use DB *to define message strings, like this:*

```
DB 'Message',0 ;Comment
```

HSI uses DM *for this. Quotes around the*



Circle 15 on reader service card.

string are not allowed, nor are comments. Put the comment on a separate line. Define the 0 *byte on its own line. Like this:*

```
;Comment
DM      Message
DB      0
```

Change all occurrences of PSW *to* AF. PSW *(Program Status Word) is the 8085 mnemonic for the combination of the A (Accumulator) register and F (Flags) register. When the Z-80 processor was introduced, the mnemonic was changed to* AF. *For some strange reason, the HSI assembler uses the Z-80's* AF *mnemonic.*

Replace an ENTRY *pseudo-op with HSI's* ENT. *Some assemblers assume that if* ENTRY *isn't specified, the execution address is the first address of the assembled code. In such a case, just put the* ENT *at the start of the source code.*

And finally, put the END *pseudo-op at the end of your listing. The HSI assembler requires it.*

As always, use HSI's LINE, SCR, *and* PRT *pseudo-ops throughout your source code to control line numbering, screen display, and printing during assembly.*

-MN

STAT REPLY:

In the September issue of *Portable 100*, Michael Newell asked about checking the status of the RS-232 port on the Model 200. I don't know the address for the 200, but on the 100 it's 63067. The following routine will return the status in the same format as *TELCOM*'s *Stat* function:

```
10 AD=63067
20 FORI=0TO4
30 PRINTCHR$(PEEK(AD+I));
40 NEXT
```

It can also be written on one line to save space and execution time:

```
10 FOR I=0 TO 4: PRINT CHR$
(PEEK (63067 + I));: NEXT
```

In the Model 100 technical manual, this address is listed with the *INZCOM* ROM routine for initializing the RS-232 port and modem. It refers to a 5 byte text string located at F65B(Hex). This converts to the 63067(Dec) addresses used above.

If Mr. Newell can find the address from the technical manual or another Model 200 user, I believe this routine will accomplish what he needs.

Eric Chromick
Waynesville, OH

The TELCOM *stat string in the Tandy 200 starts at address 61244. Use that value in place of 63067 above. For other* TELCOM *ROM routine addresses, refer to the* Tandy 200 Technical Reference Manual; Portable 100 *back issues, for example, Carl Oppedahl's "Tandy Portables: What's the Difference?" (June '85); and of course, the major on-line services. To handle handshaking signals and other operations,* BASIC's INP() *and* OUT *statements will access I/O ports directly. These should be shown in the tech ref manual. Thanks for the help, Eric!*

-MN

TOUGH BEING GREEN

I am writing to ask if you or any of your readers know of a version of *KERMIT* for the Model 100/102? I have been unable to find one through *KERMIT* (Columbia U.) channels or through Tandy in Fort Worth, Texas.

Thank you for your help.

Mark Miller
Schenectady, NY

I seem to recall seeing that file transfer protocol on CompuServe. You might try GEnie and the Source as well. Can anyone else help us?

-MN

Y NOT?

In answer to Jim McGill's question (Oct. '88, "DEFUSR"), *GRPH-Y* sends a true break on the Model 100—at least, it works for me.

Frederick Crane
Iowa City, IA

Thanks, Frederick! I'm afraid neither GRPH-Y *nor* GRPH-y *would work for me. But if it works for you, perhaps it will work for others. And it's so easy, there's no reason not to try it.*

-MN

INPUT - OUTPUT

Need to get analog voltage or digital switch information into your M102?

Want to send analog or digital data from your M102?

Low cost hardware which plugs into system bus.

Call or write:

Rural Engineering Inc.
Route 14, Box 113F
So. Royalton, VT 05068
Tel. (802) 763-8367

Circle 88 on reader service card.

"HIGH" POWERED 100

As an airline pilot I occasionally use my Model 100 in the cockpits of the Boeing aircraft I fly, plugging the AC adapter into a 115-volt receptacle conveniently located on the aft circuit breaker panel. I now discover that the frequency of this outlet is 400 cps (as produced by the aircraft generators).

Is there any harm that may result from long-term use of such electrical power?

Mark E. Ingram
Purdy, MO

Radio Shack technicians tell me it's no problem. The transformer might run a bit warmer; that's all. However, let me suggest that if you experience frequent power dives, then by all means, feel free to discontinue the practice (tee-hee!).

-MN

PUZZLE.BA

*Editor's note: When he heard that space restrictions could delay publication of Michael Heim's article, Paul Globman called me. "Why not run a mini-*Custom 200 *this month to make room?" he asked. "I've got just the thing!"*

And indeed he does! His little "Christmas present" will definitely challenge you. A real head-scratcher. Press a number to select a block. Move it with arrow keys. If it's three in the morning, the dog is trying to dig his way into the house, and you've made your last pot of coffee, press ESC *to return to the menu. (This program and a M100/102 version are also on CompuServe's Model 100 Forum.) So have fun, and good luck! Then later—when we're darn good and ready—we just* ***might*** *publish his solution.* -MN

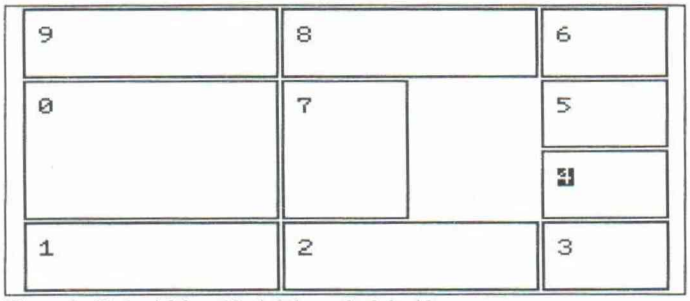


Figure 1. (Before) Move block 0 from the left side...

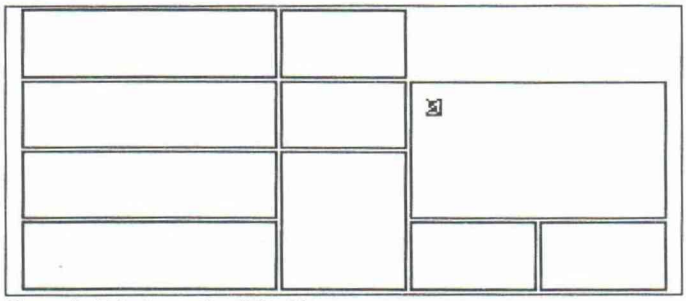


Figure 2. (After) ...to the right side.

```
 Ø REM PUZZLE by Paul Globman
 1 REM        copyright (c) 1988
 2 CLS:DIMLC(2Ø):C=1:FORI=ØTO9:READSQ(I),
TY(I):NEXT:FORI=1TO4
 3 READXX(I),YY(I):NEXT:FORI=ØTO9:GOSUB48
:NEXT:I=4
 4 RV$=CHR$(27)+"p":GOSUB48:GOSUB26
 5 A$=INKEY$:IFA$=""THEN5
 6 IFA$=>"Ø"ANDA$<="9"THENRV$="":GOSUB5Ø:
I=VAL(A$):GOTO4
 7 IFA$=CHR$(28)THEN15
 8 IFA$=CHR$(29)THEN12
 9 IFA$=CHR$(3Ø)THEN19
 1Ø IFA$=CHR$(31)THEN22
 11 IFA$=CHR$(27)THENMENUELSEBEEP:GOTO5
 12 IFSQ(I)MOD5=ØTHEN11
 13 SF=Ø:GOSUB31:IFSF=ØTHEN11
 14 GOSUB47:SQ(I)=SQ(I)-1:GOTO4
 15 IFSQ(I)MOD5=4THEN11
 16 IFTY(I)MOD2=ØAND(SQ(I)+1)MOD5=4THEN11
 17 SF=Ø:GOSUB39:IFSF=ØTHEN11
 18 GOSUB47:SQ(I)=SQ(I)+1:GOTO4
 19 IFSQ(I)<5THEN11
 2Ø SF=Ø:GOSUB35:IFSF=ØTHEN11
 21 GOSUB47:SQ(I)=SQ(I)-5:GOTO4
 22 IFSQ(I)>14THEN11
 23 IFTY(I)>2THENIF(SQ(I)+5)>14THEN11
 24 SF=Ø:GOSUB43:IFSF=ØTHEN11
 25 GOSUB47:SQ(I)=SQ(I)+5:GOTO4
 26 FORJ=ØTO19:LC(J)=Ø:NEXT:FORJ=ØTO9:LC(
SQ(J))=1
 27 IFTY(J)MOD2=ØTHENLC(SQ(J)+1)=1
 28 IFTY(J)>2THENLC(SQ(J)+5)=1
 29 IFTY(J)=4THENLC(SQ(J)+6)=1
 3Ø NEXT:RETURN
 31 IFLC(SQ(I)-1)=1THENRETURN
 32 IFTY(I)<=2THENSF=1:RETURN
 33 IFLC(SQ(I)+4)=ØTHENSF=1
 34 RETURN
 35 IFLC(SQ(I)-5)=1THENRETURN
 36 IFTY(I)MOD2=1THENSF=1:RETURN
 37 IFLC(SQ(I)-4)=ØTHENSF=1
 38 RETURN
 39 IFLC(SQ(I)+1+(TY(I)+1)MOD2)=1THENRETU
RN
 4Ø IFTY(I)<3THENSF=1:RETURN
 41 IFLC(SQ(I)+TY(I)+3)=ØTHENSF=1
 42 RETURN
 43 IFLC(SQ(I)+((TY(I)<3)+2)*5)=1THENRETU
RN
 44 IFTY(I)MOD2=1THENSF=1:RETURN
 45 IFLC(SQ(I)+1+((TY(I)<3)+2)*5)=ØTHENSF
=1
 46 RETURN
 47 C=Ø
 48 X=SQ(I)MOD5:Y=INT(SQ(I)/5)
 49 LINE(X*48,Y*32)-((X*48+XX(TY(I))),Y*3
2+YY(TY(I))),C,B
 5Ø PRINT@41+Y*16Ø+X*8,RV$CHR$(I+48)CHR$(
27)"q";:IFC=ØTHENPRINTCHR$(8)+" "
 51 C=1:RETURN:DATA 5,4,15,2,17,2,19,1,14
,1,9,1,4,1,7,3,2,2,Ø,2
 52 DATA 46,3Ø,94,3Ø,46,62,94,62
```

End of listing.

PUZZLE.BA, for the Tandy 200.

BACK ISSUES!

Ever since we bought Portable 100, the most frequently asked question has been, "Do you have any back issues?" Up until now the answer has been, "No." Nevertheless, all this time we have been tracking down a rumor that somewhere in Camden, Maine, was a barn loaded with old issues of Portable 100. Well, we finally ran it to ground and found the barn, the issues, and the barn's owner. To make a long story short, we now have Portable 100 back issues. The bad news is that we have only a limited number of issues, merely 100 per month published, thirty-one months in total, plus those of our own (see chart below).

Because of this these pre-1987 collector issues are available for **$19.95** each, postage and handling included. The issues from August 1987 to present are **$5.00**, postage and handling included.

To help you decide which issues you want, we've put together a special, comprehensive 18-page article index covering every issue published from September, 1983 (premier issue) to the July/August 1988 issue. This index is available for only **$5.95**, plus $1.05 shipping and handling. The $5.95 will be credited to your first back issue order.

Month	83	84	85	86	87	88
January			*NOT PUBLISHED*			
February						
March			*OUT*		*NOT PUBLISHED*	
April		*OUT*				
May		*OUT*				
June		*OUT*				
July		*OUT*		*OUT*		
August						*NOT PUBLISHED*
September	*Premier Issue*					
October		*OUT*		*NOT PUBLISHED*		
November						
December						

Is the issue you want sold out? If so, photocopies of the articles are available. Get the Article Index for details.

❑ Send me the Portable 100 Article Index for **$7.00** ($5.95 + $1.05). I understand the **$5.95** cost will be credited to my first back issue order.

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